ENGINEERING NEWS-RECORD

JULY 20, 1961

PRICE 50 CENTS

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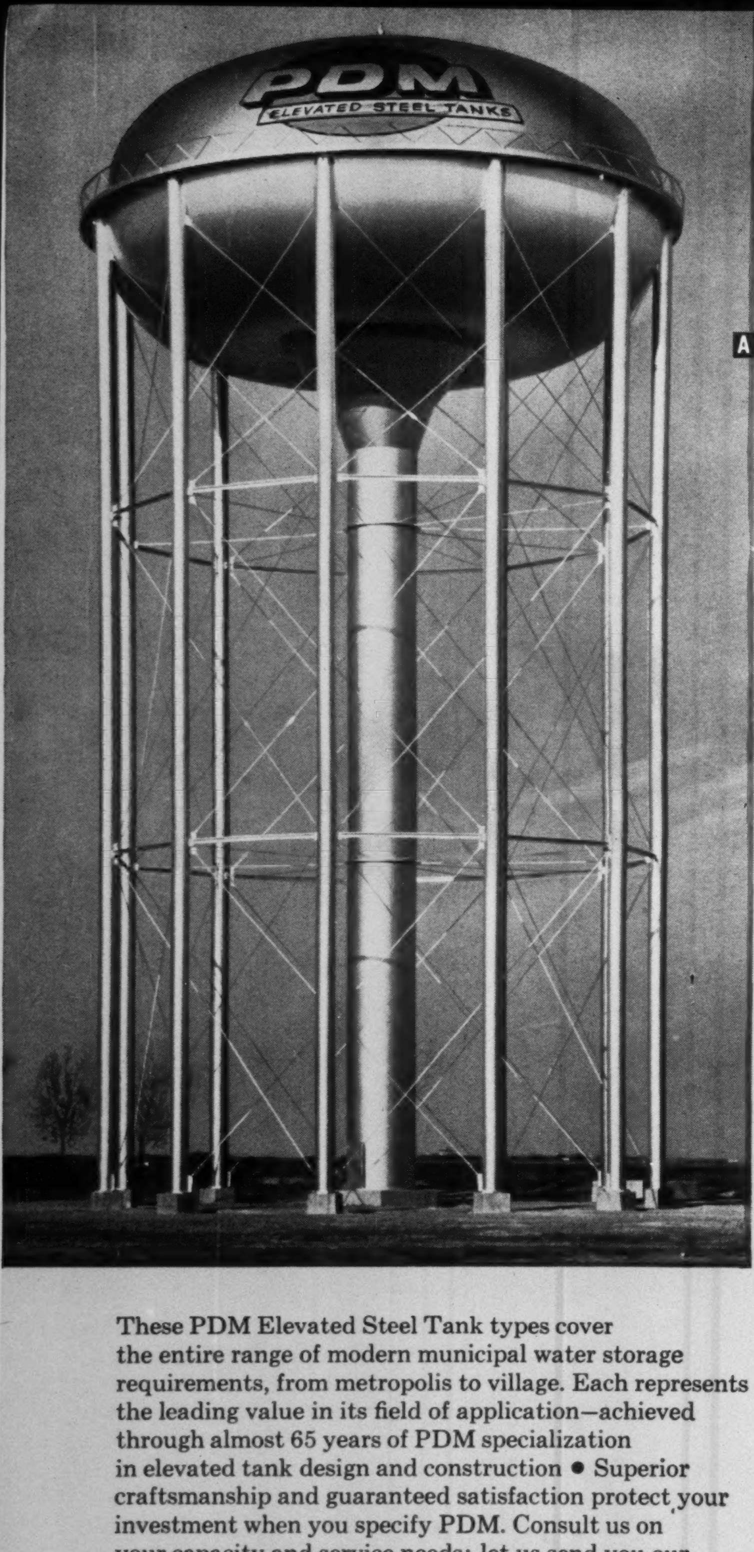
A McGRAW-HILL PUBLICATION



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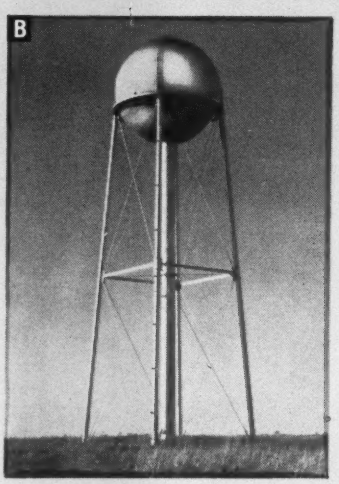

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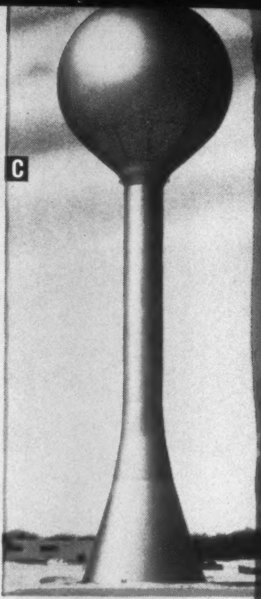

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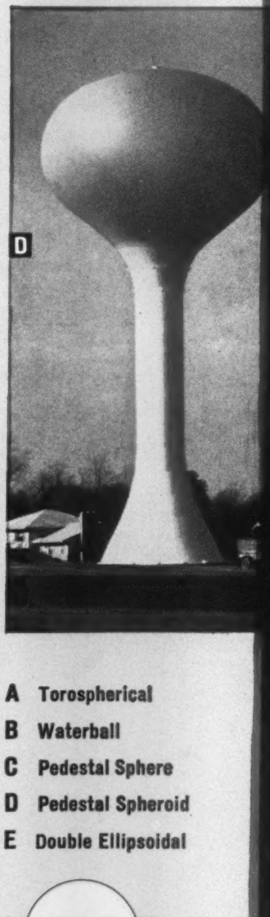

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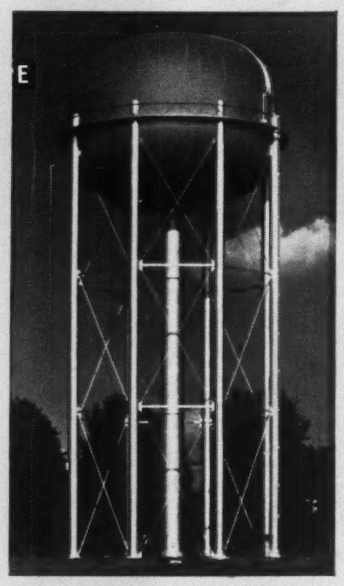

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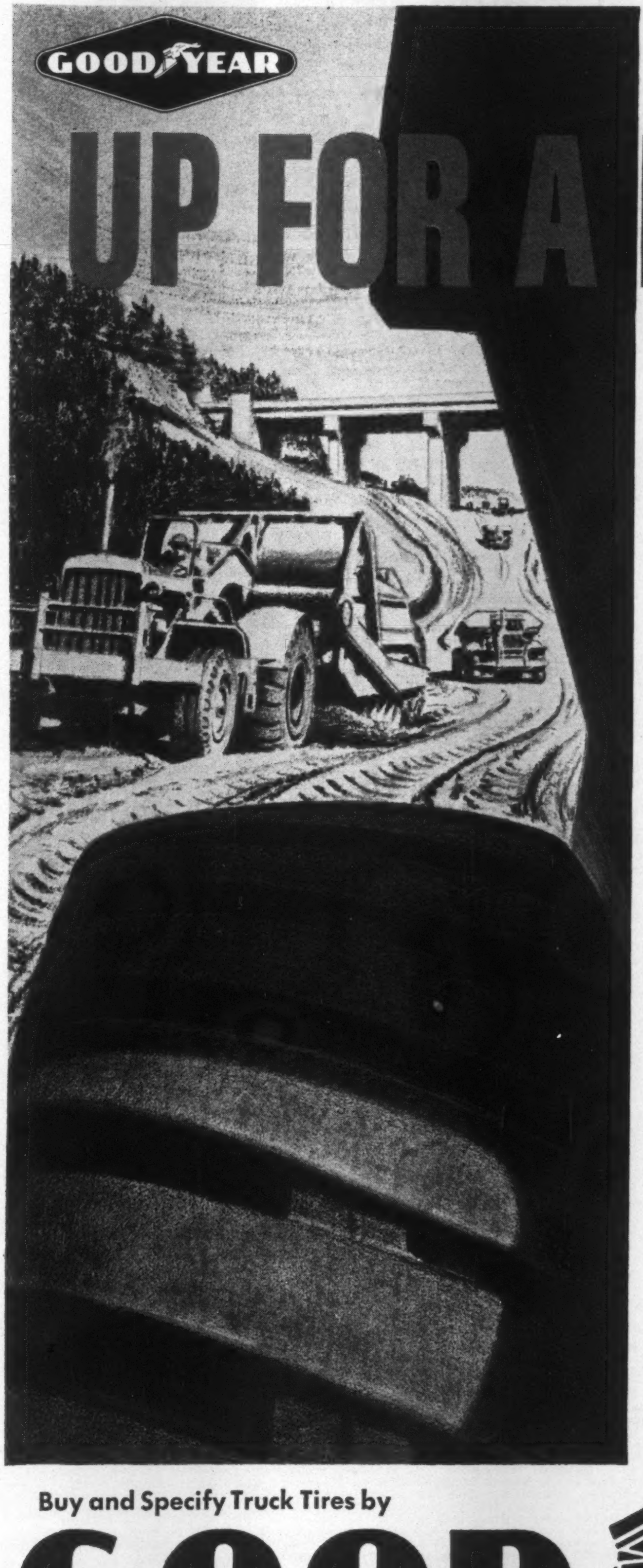

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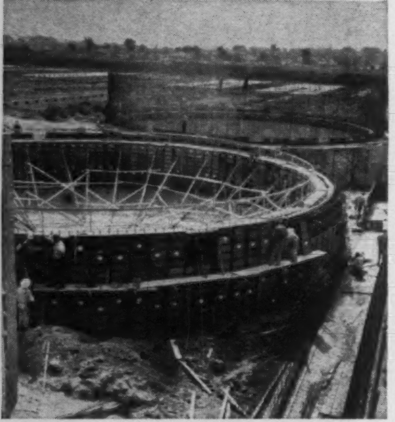

Symons special haunch brackets re-used 4 times at a cost far below job-built brackets

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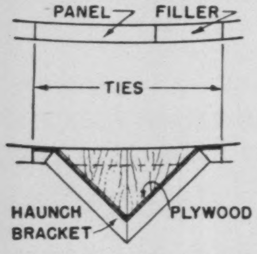

Plan view of special haunch brackets used horizontally on first lift.

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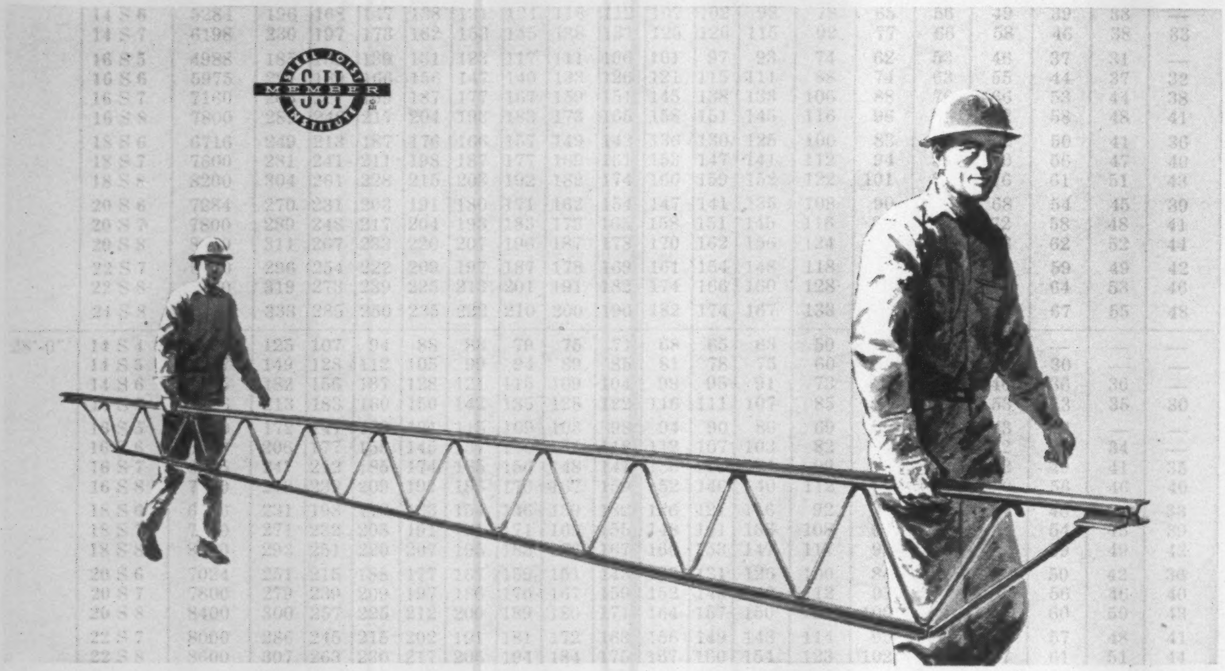

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Simplex lasts over twice as long as other teeth on Massachusetts Construction Job

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Shovel owners in all parts of the country find Simplex teeth are lasting 2 to 4 times longer than competitive 2-part teeth. They are made of the toughest alloy steel available for this use (Amsco "CS"—a specially heat-treated steel). Tips stay sharp, are quickly reversible and can be changed in minutes. The husky adapter provides greater bearing and supporting surface to help insure a strong tight fit of the tip.

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Reader Comment

Anti-anti-pirating

SIR—Your editorial The Rules of the Game (ENR June 22, p. 322) very properly tears away the veil of sympathy for those companies who would enter into collusive agreements to protect themselves against so called pirating of personnel.

Collusive agreements banning the free movement of personnel violate the basic concepts of our system of free enterprise as your editorial correctly points out. To this we would add that such agreements involving engineers are in serious conflict with the code of ethical practice for engineers. The New York State Society of Professional Engineers Committee on Ethical Practices intervened in such a case very recently that may be of interest, because it has many typical aspects.

The principal of an engineering firm issued a policy statement to his personnel department stating, in effect, that no application for engineering employment would be considered unless accompanied by a written release from the applicant's present employer. Upon investigation by a representative of this Society's Ethical Practices Committee, it developed that the purpose of the statement was "to make it clear that this firm always avoids unethical 'piracy' practices in the employment of personnel."

The principal involved is himself a good engineer. A little friendly discussion made clear to him that, in an attempt to disclaim "unethical piracy," he had been led into a serious violation of engineering ethics. As soon as the situation was revealed to him in its true light, the principal took immediate steps to correct the policy. Good engineers are like that.

The New York State Society of Professional Engineers is always available through the Committee on Ethical Practices for such service. All engineers should be alert for violations of ethical practices and call upon us wherever such conditions exist.

Our compliments to you and your very timely and effective editorial on this subject.

CHARLES J. WURMFELD *Chairman*
Committee on Ethical Practices
New York State Society of Professional Engineers
New York, N. Y.

(Reader Comment continued p. 11)

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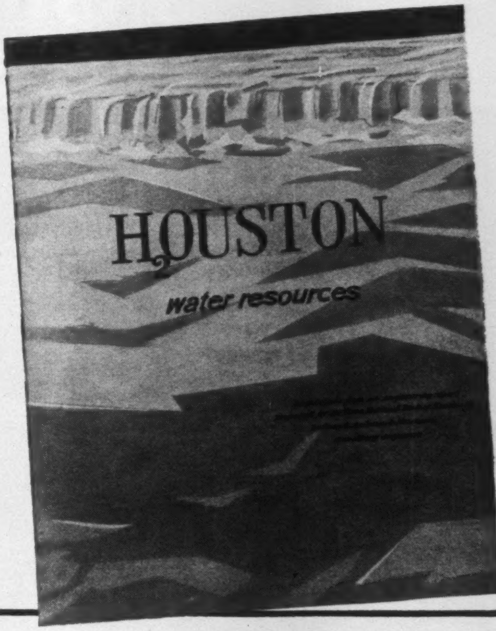

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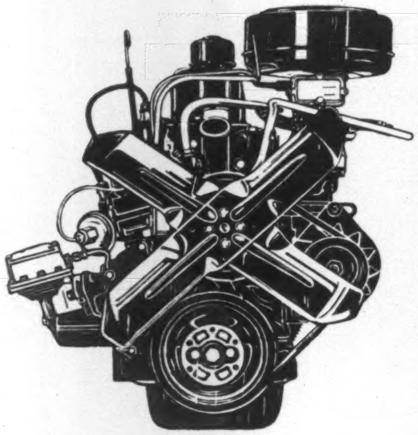

Now, the economy of a Six is combined with the dependability of heavy-duty, *exclusive-truck* engine design. In independent tests, Ford's new Big Six was pitted against the major competitive Six. Certified* result: Ford Trucks gave 13.5% better gas economy! And Ford recommends 34% fewer service operations in 25,000 miles of customer service. This means less time in the shop . . . more time on the job.

The new Big Six is one of *four* engine choices in Ford F-600 trucks for '61—including America's most popular truck V-8's. See your Ford Dealer. He will be glad to help you select the best engine for your job.

**Tests simulated typical city delivery and shuttle service*

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1. Rigid quality controls give you the strongest safeguard of truck reliability ever. Modern, *exclusive-truck* manufacturing facilities, with emphasis on quality every step of the way, are designed to give you a Ford Truck that is as free from defects as a truck can be. Tangible results of these high standards are Ford's new warranties.

2. Exclusive 100,000-mile warranty (or 24 months) on 401-, 477- and 534-cu. in. Super Duty V-8's is the most liberal in the industry. Each major engine part (including block, heads, crankshaft, valves, pistons, rings), when engine is used in normal service, is warranted by your dealer against defects in material or workmanship for 100,000 miles or 24 months, whichever comes first. The warranty covers full cost of replacement parts . . . full labor costs for first year or 50,000 miles, sliding percentage scale thereafter.

3. 12,000-mile warranty (or 12 months) on all 1961 Ford Trucks of every size is further evidence of the confidence Ford has in its quality controls. Each part, except tires and tubes, is now warranted by your dealer against defects in material or workmanship for 12 months or 12,000 miles, whichever comes first. The warranty does not apply, of course, to normal maintenance service or to the replacement in normal maintenance of parts such as filters, spark plugs and ignition points.

4. Special fleet financing can be arranged by your Ford Dealer. It's available for owners of two or more trucks, and provides the opportunity to precisely tailor payments to your income patterns or depreciation schedules. This fleet-fitted financing offers substantial savings and frees your working capital.

5. Sales engineers and service specialists in 36 district offices are on call to solve special truck problems. Working with both dealers and customers, these experienced truck men represent another extra step Ford takes to provide your continued satisfaction.

6. Replacement parts depots at 26 strategic locations across the country quickly supply needed parts from ample stocks. Ford's entire supply system is geared to give you faster service and reduce costly downtime . . . *wherever* you are.

7. 6,800 Ford Dealers, including 280 specialized Heavy Duty truck dealers, can keep your trucks ready to go wherever they go. From coast to coast, fast Ford service—gas *and* Diesel—is always close at hand.

From Super Economy pickups to Diesel-powered tractors, you can now fill every truck need up to 76,800 pounds GCW with a modern, money-saving Ford Truck.

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WAY
TO AVOID
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immediate protection against roadside erosion . . .

SOIL SAVER

Each day, erosion from rain and water run-off cuts into the highway investment of every state. If you share in the responsibilities of highway planning, building and renewal, then erosion, its defeat and prevention, is your concern. You, of all people, should know about Soil Saver.

Soil Saver is a heavy jute mesh. It is simple as dirt, and almost as cheap! It costs, in fact, some 75% less than sod, and 1400% less than asphalt or concrete paving. Wind, water or growing grass cannot displace it. Many leading state highway design engineers across the nation now include it in their original specifications. They have seen how it protects seed and soil in critical areas until grasses take over.

Soil Saver belongs in your plans. Get the facts . . . write for full details to Dept. EN-71.

LUDLOW TEXTILE PRODUCTS
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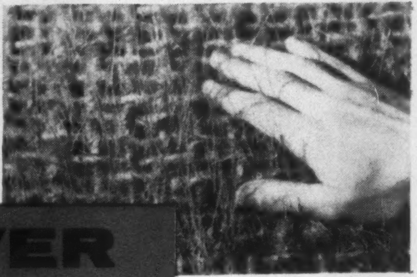
ABOVE: Soil Saver applied to critical center of steep grade median strip. **BELOW:** Stabilizing grass growing through Soil Saver heavy jute mesh.



Ludlow

SOIL SAVER
Heavy Jute Mesh
SIMPLE AS DIRT AND ALMOST AS CHEAP

What to Do About Graft

SIR—My congratulations and approval for your editorial Proud of Your Industry? (ENR June 29, p. 60).

Unfortunately, there is a great tendency for money to flow from one interested party to the other in public works construction as the industry now functions. It is difficult to see how this can be changed for the better except by a greater regard for integrity.

Your editorial seems to agree that "individuals can't stop it" but it seems to me it can be stopped in no other way than by individuals; through greater moral responsibility and a lessened inclination for a "fast buck."

The problem is how to bring about greater integrity and moral responsibility; much greater vigilance by higher-ups all along the line would seem to be the most effective step that can be taken. Such vigilance can be promoted in various ways—among them would be by publicity—calling attention to the evils that exist.

I hope you will continue to give your attention to this situation and to work for its betterment. It merits the best efforts of ENGINEERING NEWS-RECORD.

J. D. TULLER
Red Bank, N. J.

SIR—Graft—scandal in engineering and inspection of public works construction—reads your first article this week (ENR June 29, p. 17).

I think we should look beyond the few people who are linked with this scandal to the reasons behind it.

It would be well to burst the civil service bubble that has been created over the years. The belief that those working for the government are on a continual gravy train of nothing but benefits should be replaced by the facts. While private business has been moving ahead with employee benefits and pay scales, the government agencies have been standing still.

It is not possible to buy steak for the price of hamburger.

It would seem to be more beneficial to the contractors to use the money that they give individuals and the money spent on gifts, token or otherwise, as a donation to the Associated General Contractors to be used in lobbying for better conditions for government employees.

A high standard of living usually will remove temptation. A person well compensated does not want to jeopardize his position.

DONALD L. DEACON
Kesena, Calif.

ENR's Index of Editorial Content for January-June 1961 is now being mailed to those on the Index mailing list. If you wish your name added, please write to: Indexing Dept., Engineering News-Record, 330 West 42nd St., New York 36, N. Y.

IN THE HEART OF DOWNTOWN HOUSTON
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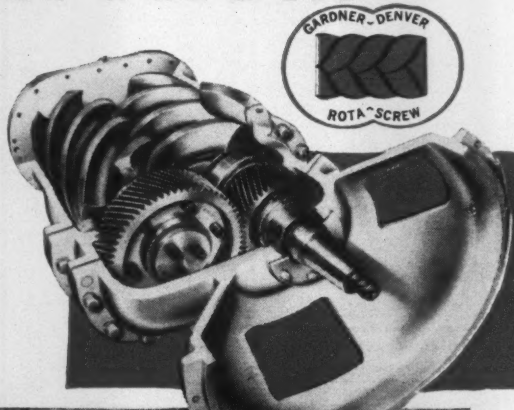
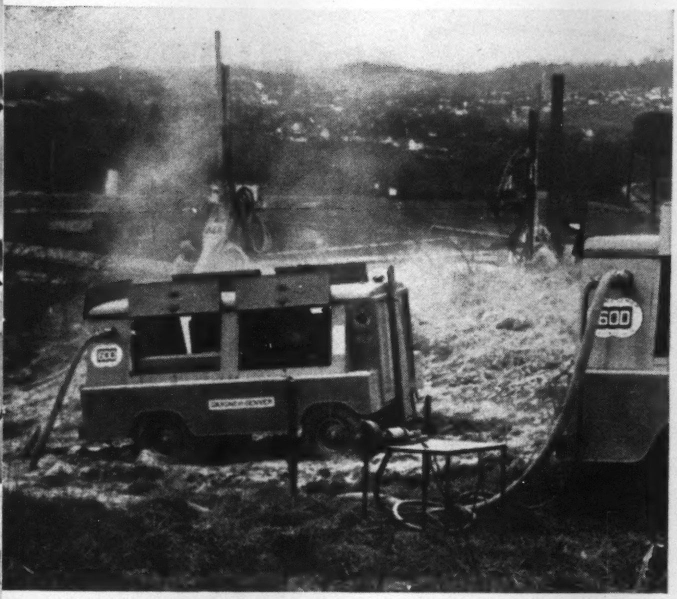
GARDNER-DENVER'S NEW ROTA-SCREW PORTABLES ARE TAKING OVER FROM COAST TO COAST

GARDNER-DENVER
ROTA-SCREW



Gardner-Denver Rota-Screw compressor capacities: 900, 600, 125 cfm. For full details, write for Bulletin SP-1.

IN THE ROCKIES: New SP600 Rota-Screw portables and swing-boom "Air-Trac" drill building access road to Round Butte Dam site near Madria, Oregon.



EAST COAST: Battery of SP600 Rota-Screw portables and swing boom "Air-Trac"® drills on super highway in Virginia.

GARDNER-DENVER

MIDWEST: A new Gardner-Denver SP600 Rota-Screw portable powering "Air-Trac" drill in an Indiana stone quarry.

1. NO WEARING PARTS IN COMPRESSION CHAMBER
2. INSTANT COMPRESSED AIR. AUTOMATIC BLOWDOWN
3. AVAILABLE NOW IN THE SIZES YOU NEED

GARDNER-DENVER

WEST COAST: SP600 Rota-Screw portable teams up with a swing boom "Air-Trac" drill on access road to logging camp near Portland, Oregon. There's a new Rota-Screw portable operating in your area, too! Write for more information.

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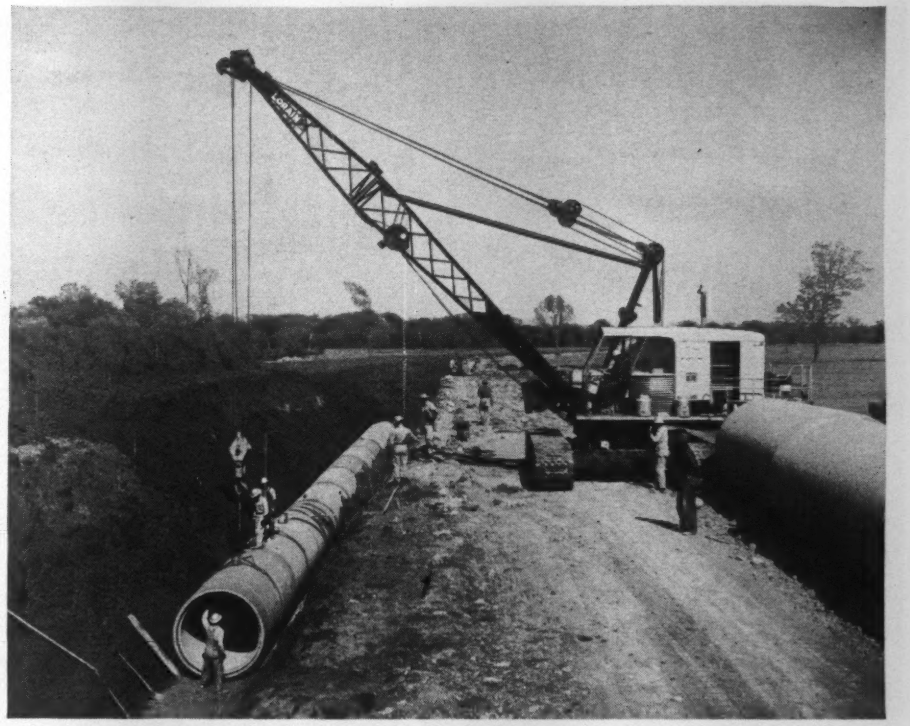

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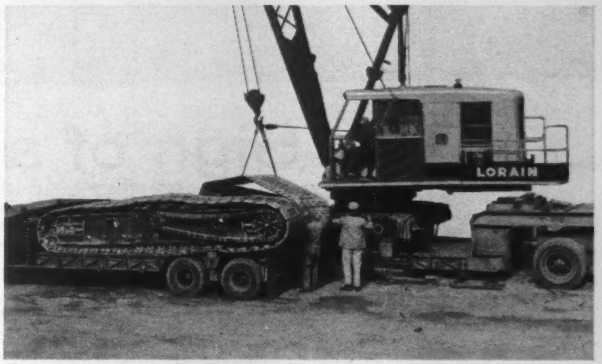

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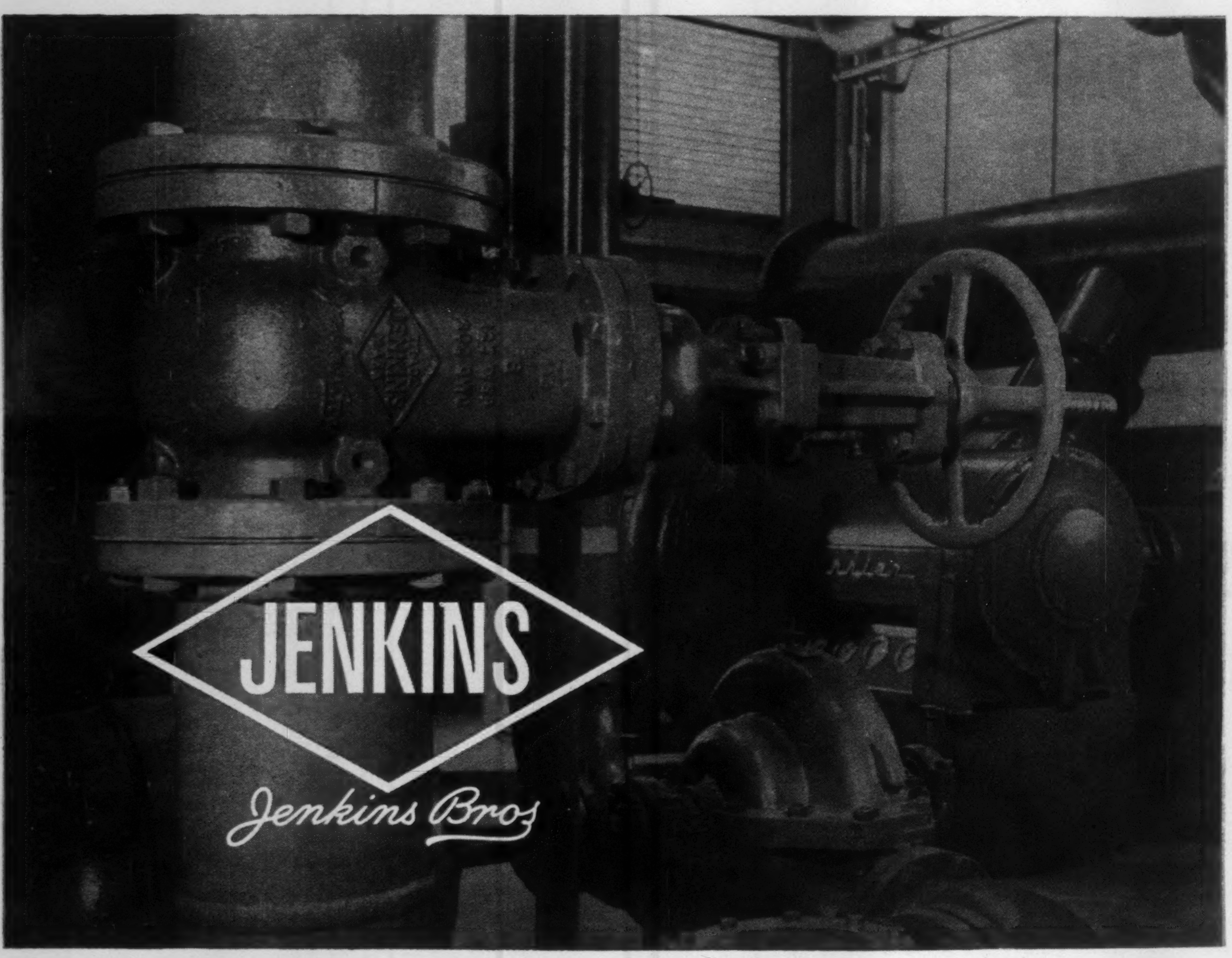

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ENGINEERING NEWS-RECORD

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THE CONSTRUCTION WEEK

AGC OPENS FIRE ON CORRUPTION—The publicity given to investigations of the highway program and building practices in big cities have produced "a distorted image of the construction image," says M. Claire Miller, president of Associated General Contractors, in a letter to members. He advises: "Good public relations is the responsibility of every member, and can best be reflected only by conduct in keeping with basic principles of skill, integrity and responsibility" (see p. 126). AGC called the letter the beginning of a program.

ALL THOSE PLANS, BUT NO BUILDINGS—Architects got nearly $1.4 million in the last 10 years to design Los Angeles County buildings that were never built, says the county's chief administrative officer. Among the "phantoms" are a superior courts building, municipal courts building, a parking garage and hospitals. In all but one case, plans were abandoned.

RAISING THE ANTE—In the current Montreal office building boom, the two tallest projects—at 42 and 45 stories—raised their roofs a floor or two during late planning stages vying for the "tallest-in-town" label. But now that they are well under way, both will be topped by a newcomer that may exceed 50 stories.

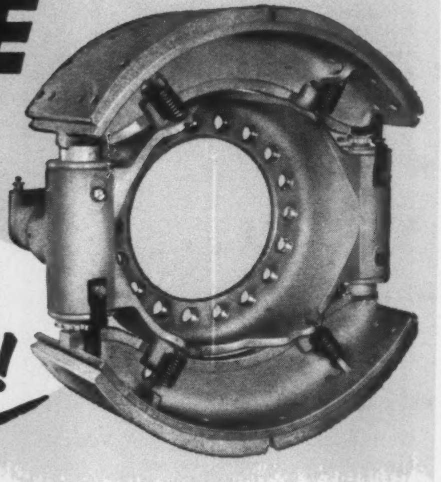
KENTUCKY'S DERBY START—First urban planning grant under the Area Redevelopment Act, signed May 1, went to fast-moving Kentucky. It got $164,260 that will help 47 cities improve and expand industry and housing. The state and communities will contribute $55,000.

ICBM STRIKES DROP SHARPLY—Time lost as a result of strikes at missile sites fell to 320 man-days in June, compared to 26,000 in June, 1960, says Labor Secretary Arthur Goldberg. In a report to the President, Mr. Goldberg attributed the drop to the Missile Sites Labor Commission (see p. 112).

MAKING TRACKS NORTHWARD—Confronted by a build-or-beat-it ultimatum, the promoters of the proposed 700-mile, $300-million Pacific Northern Railway announced plans to begin construction (ENR July 14, 1960, p. 32). Complying with demands of the government of British Columbia, the Axel Wenner-Gren development group will begin clearing 100 miles of right-of-way above Prince George.

WATCHDOGS ON THE PAYROLL—For two months, Malan Construction Corp. cut pilferage of tools and small fixtures from its two $9-million passenger terminals at Chicago's O'Hare International Airport by 90%. They added one security-trained police dog to the night patrol in each building. Each dog rents for $3.50 per hour for a 14-hour night shift.

It's here! New HEAVY-DUTY STOPMASTER BRAKE



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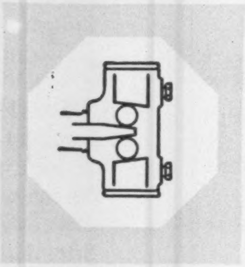

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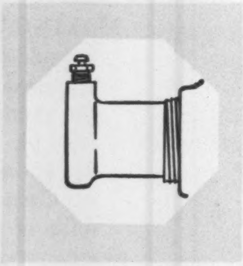

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WASHINGTON OBSERVER

- Water, air pollution gain greater stature
- Legislation adds money for sewerage
- Act of Congress bails out Massachusetts
- Tax break bid bypasses buildings

● **Water and air pollution problems will be upgraded in status by the Kennedy Administration.** But they won't be pulled from under the Public Health Service, as some Democrats in Congress would like.

Secretary of Health, Education and Welfare Abraham A. Ribicoff is thinking of creating a new Bureau of Environmental Health. Water Pollution, air pollution and radiological health would be divisions in the proposed Bureau, which still would come under the control of the Surgeon General but would have a more direct line to the Secretary's office.

—

● **Increased federal authority to combat pollution of waters finally has been approved by Congress.** Under the new law, sponsored by Rep. John A. Blatnik (D., Minn.) and supported by the Administration, federal officials will be able to enforce anti-pollution measures on intrastate waters—if the governor of the state requests such action. Under the old law, federal authority was confined to interstate waters.

The Blatnik act also more than doubles federal funds available for construction of sewage treatment plants. Federal money for grants to communities includes $80 million in the current fiscal year, $90 million in fiscal 1963, and $100 million in each of the four subsequent years. Grants for individual communities for a single project are increased from $250,000 to $600,000. But a group of communities may get as much as $2.4 million for sewage disposal plants.

—

● **Congress has extricated Massachusetts from a legal tangle that threatened to cost it $51 million in federal highway funds.** It has authorized the Commerce Secretary to give Massachusetts the money next month even though the state enacted a truck-weight law which, in effect, violates federal regulations. The legislature has promised to correct the action early next year.

—

● **Construction interests lost out in a tentative vote of the House Ways and Means Committee on the President's proposal to give a tax incentive to stimulate investment in plant and equipment.** The committee approved an across-the-board 8% tax credit, but it would apply only to machinery and equipment (including construction equipment), not to buildings. The version approved would allow a business to deduct from its tax bill 8% of the amount spent on equipment during the year. There are a number of qualifications, but the committee did liberalize the proposal by allowing the credit to apply to the first $50,000 of second-hand equipment.

—

● **The $226-million Atomic Energy Commission construction bill is breezing through Congress with but one roadblock.** Major item in the measure is $114 million for the long-discussed Stanford linear electron accelerator. There is virtually no opposition to this. But the House knocked out $95 million to build electric generating facilities at the nuclear reactor at Hanford, Wash.

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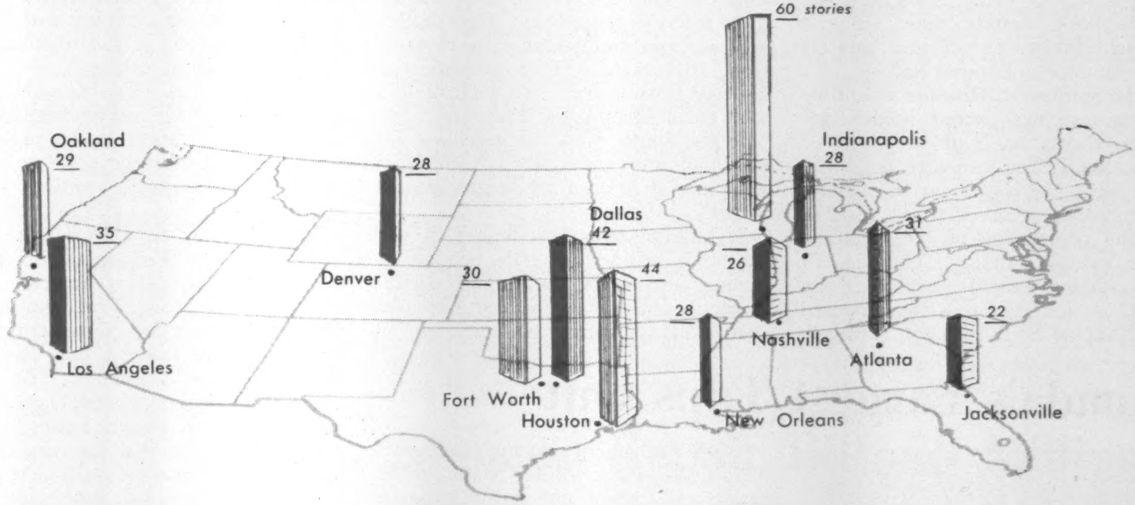


Record Breakers (since 1955)

Building Heights Climb Higher

U. S. cities are growing upward, as well as outward.

Some that didn't have a single skyscraper five years ago now have one or more. Many that have had skyscrapers then now have higher ones.

An Engineering News-Record survey completed last week shows that at least 12 cities set building height records since 1955. In the same period of roughly five years, 29 cities have built to 20 stories or more on 58 sites.

(New York City isn't included in the study, because of the preponderance of skyscrapers in Manhattan and the overshadowing eminence of the champion 102-story Empire State Building, which makes all challengers look puny.)

Main reason for the big push upward: Available land in densely populated cities is rapidly becoming scarce and very expensive. The trend to the suburbs did not relieve the pressure for office space in downtown areas.

To check the pulse of this high-rise trend, ENR chose 100 metropolitan areas as potential high-rise regions and surveyed them. Forty-one, of the 100 cities, went to 15-or-more stories since 1950 with a total of 144 structures. And of these 144 towers, 116 reaching to 20 or more stories can be found in 38 different areas.

Since 1950, 58 of the structures over 19 stories went up in the first five years, and 58 in the second five years, to the present.

The skyscrapers of 25 to 30-plus stories, are also increasing in number. Since 1955, 11 cities account for 11 buildings in the 25-29 range, and seven cities for 11 towers that reach to 20-or-more stories. This is a strong continuation of the high-rise trend in the 1950-55 period. During those years 13 buildings went up to 25-or-more stories, and eight to 30-plus.

The 58 buildings bigger than 19 stories that have been accounted for since 1955 are scattered throughout the nation. Among the cities that recently built to 20 or more levels are: Cleveland with six buildings; Newark, N. J., and Seattle with three each; Baltimore, Birmingham and Memphis with two each; and at least one in Buffalo, Cincinnati, Dayton, Indianapolis, Jackson, Miss., Minneapolis, Nashville, New Orleans, Philadelphia, Richmond, St. Louis and San Antonio.

But why are high-rise structures popular, when it costs more to build higher? One reason is the high cost of real estate, which makes it necessary to put more rentable space on a plot to earn a profit.

Building costs increase when extensive razing is necessary. To offset the cost, owners build higher. Even when urban renewal makes land available for commercial use, land costs are still so high that tall buildings are necessary.

Sometimes prestige will incite an owner to reach for the sky. But even in these cases, building height is determined by practical considerations. Renting potential of the space must be taken into account.

Technology plays a major role in the high-rise trend. Better designs, better materials and advances in construction techniques tend to encourge taller structures (see ENR Feb. 26, 1959, p. 21).

Here's a peek at what is going on:

In New England, motels and apartment houses are getting taller; occasional office buildings are also higher.

(Please turn the page)

The new giants:

City	Building	Stories
Atlanta	Bank of Georgia.........	31
Dallas	Southland Life Tower.....	42
Denver	First National Bank.......	28
Fort Worth	Continental National Bank	30
Indianapolis	City-County Building......	28
Nashville	Life and Casualty Tower...	26
Jacksonville	Prudential Building.......	22
New Orleans	Baronne Building.........	28
Oakland	Kaiser Center............	29
Houston	Humble Building.........	44
Chicago	Marina City	60
Los Angeles	333 West Sixth St. Bldg...	35

Boston is scheduled for a 155-ft apartment house under a revised height limitation in the zoning code. The old limit was 50 ft.

In the Far West there is also a trend to taller apartment houses. San Francisco's Golden Gateway project will have eight 22-story apartments and one 25-story office building. San Francisco has no height restrictions downtown.

Seattle will probably stay within the 20-story limit, despite some high-rise apartment houses. Most new projects are garden-type apartment houses.

In the Southwest, Houston's Humble building is a new record holder (see p. 41). Dallas has had a splurge of high-rise banks and insurance buildings, and it looks like a race for the record. The record was set at 36 stories in 1954 with the completion of the Republic National Bank Building. Then in '59 the Southland Life Tower moved up with 42 stories. And now the proposed First National Bank may top them all.

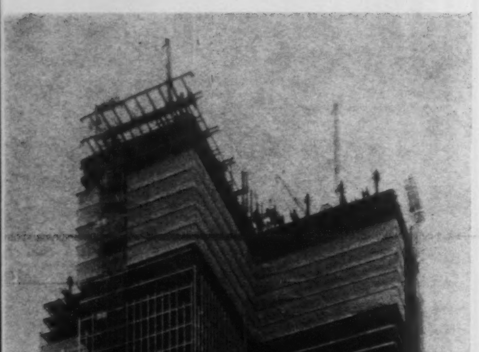
Banks throughout the U. S. have been going into rather high buildings. At least 17 buildings for banks, not including the 60-story Chase Manhattan Tower in New York City, have been built above 15 stories since 1955.

The Midwest is spread out at a little lower level than other areas. But with Cleveland's six new skyscrapers in five years, and with Chicago going to 60 stories in Marina City and to 30 stories three times in the last five years, buildings are also rising higher in that region. Indianapolis is constructing a 28-story glass tower. And Detroit will soon get a 32-story building.

In the South, New Orleans has a 28-story building under way. Both Jacksonville and Atlanta set height records recently.

If buildings go even higher in the future, it will be not only because of higher land costs, but more significantly, because of engineering advances that reduce construction costs.

Canada's Largest Tops Out



With Parliament-opening ceremony, Montreal's Place Ville Marie office tower was topped out last week as a steel worker tightened a gold-plated bolt at roof level, 600 ft above the ground.

The 42-story steel-framed tower is called the Royal Bank of Canada Building. Place Ville Marie is a 7-acre, $88,-million development spreading over part of Canadian National Railway's downtown track network (ENR Feb. 23, p. 41).

The building's outstanding structural feature is its cantilevered floor system. There are no exterior columns. Floors extend out more than 12 ft from four pairs of columns in each wing of the cruciform building. Girders in pairs frame past each side, rather than into the columns and extend across each wing. Floor beams run the length of each wing. Connections are bolted and welded.

The tower, to be finished in mid-1962, will be Canada's largest building, but not its highest.

Several subgrade plaza levels covering the entire site and one low office building should be finished by the end of 1962.

Webb & Knapp (Canada) Ltd., is the owner-developer. I. M. Pei & Associates, New York City, are the architects.

Brett-Ouellette-Blauer Associates are the structural engineers; Severud-Elstad-Krueger Associates of New York City are structural consultants. The Foundation Company of Canada, Ltd., is the general contractor. A joint venture of Dominion Bridge Co., Ltd., and Dominion Structural Steel, Ltd., is the steel contractor.

California

In the face of continuing drought conditions in the Southwest, the consensus of California's top water men is that their state has and will have more than enough water to meet its demands.

The water experts say that if the state concentrates on conserving existing supplies while planning and building for the future, it will weather this drought and many others.

"Dry Year Water Conferences" were held simultaneously in Los Angeles and Sacramento last week. Water resources brass from all over the state gathered to discuss the state's looming water problems.

Gov. Edmund G. Brown kicked off both meetings—Wednesday in Sacramento, Thursday in Los Angeles. The governor set the tone of the conferences with pleas for an end to wasteful practices and more research into conservation of available water. "The only people who can save water are those who use it," the governor said.

He pointed out that the state is rich in water, but has a redistribution problem. ". . . 70% of our people live in a semi-arid area that normally has only 30% of our water supply."

The governor, speaking in Sacramento, reviewed the progress of the ambitious California Water Plan including the Feather River Plan, which has currently received fresh impetus (ENR July 6, p. 25). While citing the state's foresight in building to meet 1990 needs, the governor warned that projects that will be finished next year or the year after will not help today—the third year of drought for northern and central regions and the seventeenth dry year for southern California.

• **Groundwater importance stressed**—The director of the state's Water Resources Department, William W. Warne, reminded the Los Angeles conferees that although a big portion of the state's $6 billion worth of waterworks is embodied in the Los Angeles and Colorado aqueducts and in surface reservoirs, "groundwater . . . is still the most important water resource of southern California.

"Pending arrival of additional water from northern California in 1972, the groundwater resources of southern California will assume even more importance," Mr. Warne said.

The director hailed the state's new Groundwater Protection Act. The bill, signed by the governor last week, is aimed at protecting and improving the state's groundwater basins which store about 450 million acre-ft of water.

Mr. Warne also spoke in Sacramento, where he reiterated his concern over

Water Men Say Driest Is Wet Enough

the state's exploitation of its groundwater resources.

• **Replenishment under way**—Finley B. Laverty, assistant chief engineer of the Los Angeles Flood Control District, told the Los Angeles meeting that concerted efforts are under way to replenish the groundwater basins, stem seawater intrusion, and meet annual overdraft pumping demands by the purchase and spreading or injection of Colorado River water (ENR July 13, p. 28).

Tests have indicated the economic feasibility of spreading reclaimed waste water. Other tests are now under way including a demonstration project that will involve construction of a 10-mgd waste water reclamation plant for groundwater replenishment in the Whittier Narrows area of Los Angeles County (see p. 26).

• **Udall hails state's vision**—Secretary of the Interior Stewart L. Udall praised California and Governor Brown for vision in water planning. He promised the state cooperation from the federal government.

He said that the government is pushing completion of the Trinity Division of the big Central Valley Project; that negotiations with California are in the final stages for the largest single water service contract in history, which will permit the start of San Luis Dam and Reservoir; and that funds have been budgeted for a detailed study of the Sacramento-San Joaquin Delta water problem.

The Secretary said plans for the Auburn Dam and Folsom South Canal Unit, as an addition to the Central Valley Project, should go to Congress for action soon.

The Secretary of the Interior expressed hopes that California and Arizona would close ranks after the Supreme Court decision on the pending Colorado River lawsuit.

The Secretary stressed the importance of research in obtaining new sources of water: "We are at the point now where we can cautiously hope for an early breakthrough on the economic feasibility of saline water conversion."

• **MWD supplies touted**—Robert B. Diemer, general manager and chief engineer of the Metropolitan Water District of Southern California, told the LA gathering that southern California, despite a record-breaking drought, has an abundant water supply, because the MWD pushed forward the enlargement of its Colorado River Aqueduct system to full capacity.

He emphasized that this water supply must be protected against depletion by litigation or legislation.

Mr. Diemer also discussed groundwater and the importance of Colorado River water for building up the state's underground supplies.

• **Water quality stressed**—A. M. Rawn, chairman of the State Water Pollution Control Board, brought up a paradoxical water problem involving water quality rather than quantity.

Mr. Rawn said in Sacramento that two-thirds of the state's waste waters are discharged to the ocean, thus preventing a great deal of pollution of streams and groundwater supplies. But, by the same token, these waters must be considered as wasted rather than made available for reuse.

Alfred R. Golze, chief engineer for the Department of Water Resources told the Los Angeles conferees that the state has enough data to know that during any future drought in northern counties equal to the worst on record (assuming wise management of our groundwater supplies and existing imports) there will be more than enough water to meet county-of-origin needs, the annual importation requirements of the San Joaquin Valley, and the demands of the continued growth of the Southland.

• **A dry year for much of U. S.**—Almost half of the states report drier than normal conditions in the latest nationwide Weather Bureau survey. Most severely hit are the northern plains including parts of Minnesota, the Dakotas, Wyoming and Montana. But, even in these states, things aren't as bad as they were in 1934. July is not likely to slake the crop's third, but there is some hope that August or September rains will salvage some crops.

Kemano Repair Bill: $2 Million

Around-the-clock repairs to the big Kemano power tunnel will cost $2 million and take until early September, according to Aluminum Co. of Canada, Ltd., owner of the 10-mile-long bore in British Columbia.

One major rockfall and a half-dozen minor falls caused the "abnormal increase" in hydraulic losses reported as much as five years ago (ENR June 28, 1956, p. 24).

After considerable procrastinating, the company last month shut down its big Kitimat smelter—prime consumer of Kemano power—and dewatered the 25-ft-high horseshoe-shaped tunnel (ENR June 29, p. 13).

A crew of 200 men is now working three shifts to complete repairs as soon as possible. Access to the major rockfall is through an adit located at the tunnel's midpoint.

About a mile downstream from the adit a "substantial amount of rock" fell out of the tunnel roof and the force of the water has spread the rock on the floor of the tunnel for a "considerable distance."

The tunnel invert is concrete-lined for its full length but only about a third of the arch was concrete lined originally. Alcan now plans to construct a reinforced concrete arch in the "short length" where the main rockfall occurred.

Besides the major fall, inspectors found a "very much smaller" fall of rock three miles upstream from the adit. This is being cleaned out and a section of arch concrete installed.

At four or five other locations in the tunnel minor amounts of rock broke away from the roof. These sections are being repaired in a manner "designed to ensure that no further trouble develops."

The Kemano hydro project was built in the early 1950s and at the time was billed as the world's largest underground powerhouse. Initially, eight 140,000-kw generators were to be installed as the first phase of Kemano's development. A second tunnel was also included as a part of the original proposal.

Presently, seven generators are in operating condition, but power needs do not require that all seven operate simultaneously.

Alcan said this past spring that an eighth unit would ultimately be installed for operation from the existing tunnel and that there are no definite plans at the time for the construction of a second tunnel.

Alcan says conditions in the tunnel and the location of the major rockfall are about as anticipated, thereby enabling repair equipment and materials to be spotted, in advance, at the adit nearest to the work area.

For some time before dewatering the tunnel, Alcan ran the smelter at its rated capacity of 192,000 tons annually, thus assuming sufficient inventory to keep pace with metal deliveries during the shutdown.

General contractor for the repair work is Northern Construction Co. and J. W. Stewart, Ltd.

ENR's top-contractor list for 1960 jumps . . .

Company	Prime U. S. Contracts *Includes Joint Ventures: Publicly Reported to ENR	Prime U. S. Contracts *Includes Joint Ventures: Company's Figure	Total Contracts Including Subsidiaries and Foreign (Company Figures)
1. PETER KIEWIT SONS' CO., Omaha	$293,959,779*		
2. RAYMOND INTERNATIONAL INC., New York City	194,341,008	$209,597,400*	$350,132,100
3. GEORGE A. FULLER CO., New York City	185,973,992*	185,973,992*	
4. BECHTEL CORP., San Francisco	179,817,262*	259,559,000	324,006,000
5. WESTERN PIPE-LINE INC., Austin, Tex.	159,488,120*		
6. STONE & WEBSTER ENG. CORP., Boston	159,038,840		
7. H. C. PRICE CO., Bartlesville, Okla.	158,234,590		
8. J. P. NEILL & CO., INC., Dallas	154,500,000*		
9. TURNER CONSTRUCTION CO., New York City	127,997,000*	145,939,147*	
10. GUY F. ATKINSON CO., San Francisco	127,427,843*	123,323,730*	141,066,219
11. McCLOSKEY & CO., Philadelphia	126,435,878	92,700,000	
12. MERRITT-CHAPMAN & SCOTT CORP., New York City	122,402,912*	64,930,238	69,718,621
13. TIDEWATER CONSTRUCTION CORP., Norfolk, Va.	120,439,046*	140,874,076*	175,142,076
14. DANIEL CONSTRUCTION CO., INC., Greenville, S. C.	115,826,101	222,168,102	
15. M. W. KELLOGG CO., New York City	110,000,000		
16. DIESEL CONSTRUCTION CO., New York City	106,650,000	118,540,000	
17. EBASCO SERVICES, INC., New York City	106,360,000	189,770,000	
18. CAULDWELL-WINGATE CO., INC.	99,500,000		
19. KAISER ENGINEERS, Div. Henry J. Kaiser Co., Oakland, Calif.	97,786,861*	76,027,000*	118,659,000
20. TECON CORP., Dallas	92,257,385*	92,257,385*	
21. S. J. GROVES & SONS, CO., Minneapolis	85,784,474		
22. MACCO CORP., Paramount, Calif.	83,651,489*		
23. PUGET SOUND BRIDGE & DREDGING CO., Seattle	81,748,221*		
24. BROWN & ROOT, INC., Houston	81,203,137*	177,824,000	214,773,000
25. ROBERT E. McKEE, GENERAL CONTRACTOR, INC., El Paso	74,340,903	101,272,464*	
26. JOHNSON, DRAKE & PIPER, INC., Minneapolis	73,497,217*	90,000,857*	102,853,711
27. AMERICAN BRIDGE DIV. OF U. S. STEEL CORP., Pittsburgh	72,941,765*		
28. WILLIAMS BROS., CO., Tulsa	70,241,000		
29. GUST K. NEWBERG CONSTRUCTION CO., Chicago	65,816,500	72,528,500	74,223,200
30. MORRISON-KNUDSEN CO., INC., Boise	65,312,225*	207,184,000*	368,326,000
31. L. E. DIXON CO., San Gabriel, Calif.	65,219,685*		
32. PAUL HARDEMAN, INC., Stanton, Calif.	62,582,170*	139,627,422*	149,387,422
33. H. B. ZACHRY CO., San Antonio	61,598,185*	76,736,900*	109,335,700
34. HUNKIN-CONKEY CONSTRUCTION CO., Cleveland	59,516,661*	112,563,768	
35. GREEN CONSTRUCTION CO., Des Moines	58,051,579*		
36. ARUNDEL CORP., Baltimore	56,164,662*	56,062,000	
37. STANDARD INDUSTRIES, INC., Tulsa	54,005,008*	54,363,703*	54,485,791
38. OSTRANDER CONSTRUCTION CO., Portland, Ore.	52,636,785*	52,636,785*	
39. WRIGHT CONTRACTING CO., Columbus, Ga.	50,909,422*	52,613,721*	53,307,089
40. J. W. BATESON CO., INC., Dallas	50,859,774		
41. MANHATTAN CONSTRUCTION CO., Muskogee, Okla.	50,682,885*	50,090,096*	
42. METROPOLITAN PAVING CO., Oklahoma City	50,007,506*	50,007,506*	
43. DEL E. WEBB CORP., Phoenix	49,951,186*		
44. WESTERN-KNAPP ENGINEERING CO., San Francisco	49,455,950*		

88 Swept Into Favored Position

A record volume of heavy construction contract awards in 1960 helped shove 88 companies into ENR's Top-Contractors list. The number of companies in 1960 with new-business volume of $25 million or more tops the 1959 tally by 21 (ENR July 28, 1960, p. 19), and 1958's by 11 (ENR Apr. 30, 1959, p. 21).

ENR bases the Top-Contractor list on publicly reported contracts. Its listing (see above) excludes both contracts for jobs outside the U. S. and business won by domestic or foreign subsidiaries.

The total includes individually held contracts and joint ventures, the latter credited in full to each member of a joint venture. All ENR's contract figures cover prime contracts.

Minimum size of contracts reported last year by ENR were:

- Water supply, earthwork, waterways—$53,000.
- Other public works—$88,000.
- Industrial buildings—$110,000.
- Other buildings—$400,000.

In addition to ENR's tally, there are two others: the contractor's own computation of prime contracts for domestic work signed up in 1960; his total of this volume added to foreign volume and the volume won by wholly owned subsidiaries.

To obtain the contractors' figures, ENR queried all companies that won $25 million or more in new contracts according to the reports in the publication's statistical file. All but 28 companies responded.

In some cases, company figures agreed with ENR's; in others, their figures differed. Discrepancies can result for many reasons: changes that raised or lowered a project's cost after the original agreement was signed; additions to a contract after the first report was filed, or contracts never announced by parties involved.

The last stands as the major reason for differences. In such cases, usually at the client's request, the individual

Company	Prime U. S. Contracts *Includes Joint Ventures		Total Contracts Including Subsidiaries and Foreign (Company Figures)
	Publicly Reported to ENR	Company's Figure	
45. NELLO L. TEER CO., Durham, N. C.	$49,190,791*	$48,000,000*	$50,046,496
46. T. L. JAMES & CO., Ruston, La.	45,869,894*		
47. WESTERN CONTRACTING CORP., Sioux City	45,763,280	50,138,599	
48. OMAN CONSTRUCTION CO., Nashville	44,385,861*	52,339,381*	55,537,415
49. WINSTON BROS. CO., Minneapolis	42,822,529*	63,295,014*	
50. RUST ENGINEERING CO., Pittsburgh	42,346,000	65,200,000	
51. H. R. H. CONSTRUCTION CORP., New York City	41,125,000	63,436,400*	72,942,400
52. FLUOR CORP., Los Angeles	40,500,000	108,812,000	133,914,000
53. SLATTERY CONTRACTING CO., Maspeth, N. Y.	40,199,298*		
54. GRIFFITH CO., Los Angeles	39,336,699	48,304,309	
55. ROBIN CONSTRUCTION CO., Chicago	39,250,000		
56. A. L. JACKSON CO., Chicago	39,183,269		
57. JOHN McSHAIN INC., Philadelphia	37,963,000	43,463,000	
58. MALAN CONSTRUCTION CORP., New York City	37,102,507	47,589,319	55,263,192
59. HAAS & HAYNIE, San Francisco	36,695,600	36,695,600	
60. F. H. McGRAW & CO., INC., Hartford	36,512,500*	34,569,000	
61. H. L. COBLE CONSTRUCTION CO., Greensboro, N. C.	36,440,637	37,317,032	
62. HENRY C. BECK CO., Dallas	36,185,190		
63. PERINI CORP., Framingham, Mass.	35,977,390	103,223,843	112,492,809
64. INLAND CONSTRUCTION CO., Morton Grove, Ill	35,375,000		
65. R. P. FARNSWORTH CO., New Orleans	35,070,149*	41,428,287*	
66. BATES & ROGERS CONSTRUCTION CORP., Chicago	34,551,828		
67. HARDAWAY CONTRACTING CO., Columbus, Ga.	33,709,067*	42,390,919*	54,128,851
68. W. S. BELLOWS CONSTRUCTION CORP., Houston	33,285,000	40,700,000	
69. STEARNS-ROGER MFG. CO., Denver	33,100,000	40,000,000	
70. ROSCOE-AJAX CORP., Washington, D. C.	33,012,000*		
71. BETHLEHEM STEEL CO., Bethlehem, Pa.	32,956,760*		
72. KNICKERBOCKER CONSTRUCTION CO., New York City	32,512,000*		
73. HUBER, HUNT & NICHOLS, INC., Indianapolis	32,500,000	45,000,000	48,700,000
74. DRAVO CORP., Pittsburgh	31,847,124*	41,504,000*	45,331,000
75. R. M. SHOEMAKER CO., Philadelphia	31,500,000		
76. FREDRICKSON & WATSON CONSTR. CO., Oakland, Calif.	31,122,861*		
77. THE LUMMUS CO., New York City	31,000,000	56,083,000	187,470,000
78. S. S. SILBERBLATT, INC., New York City	30,113,350	30,190,400	
79. M. M. SUNDT CONSTRUCTION CO., Tucson	28,820,847*	53,978,867*	
80. S. N. NIELSEN CO., Chicago	28,736,350	29,635,465	
81. JOHN A. VOLPE CONSTRUCTION CO., Malden, Mass.	28,540,030*	28,540,030*	
82. D. W. WINKELMAN CAROLINA CO., Greensboro, N. C.	28,174,810*		
83. STOLTE, INC., Oakland, Calif.	27,531,418*	37,100,000*	
84. CONTRACTING & MATERIALS CO., Evanston, Ill.	26,442,701	41,492,262*	
85. UTAH CONSTRUCTION & MINING CO., San Francisco	26,191,937*		
86. THE AUSTIN CO., Cleveland Heights, Ohio	26,097,000*	100,000,000	110,000,000
87. R. H. FULTON & CO., Lubbock, Tex.	25,850,000	25,850,000	
88. ARTHUR G. McKEE & CO., Cleveland	25,500,000		

During Record Construction Year

total of a contract is not credited to that portion of the contractor's volume publicly reported. However, companies responding to ENR's check could revise their volume without revealing the size of contracts otherwise unreported. These figures appear in the third column above. Where a total does not appear in that column, the contractor failed to respond to the query.

The last column shows a company's total volume as reported by a responsible official of that firm. This total comprises the amount shown in the second column plus the volume of new business won overseas and volume of contracts obtained by subsidiaries in the U. S. or abroad. If a total does not appear in the final column, the contractor failed to answer ENR's query, or received no foreign work, or had no subsidiaries, foreign or domestic.

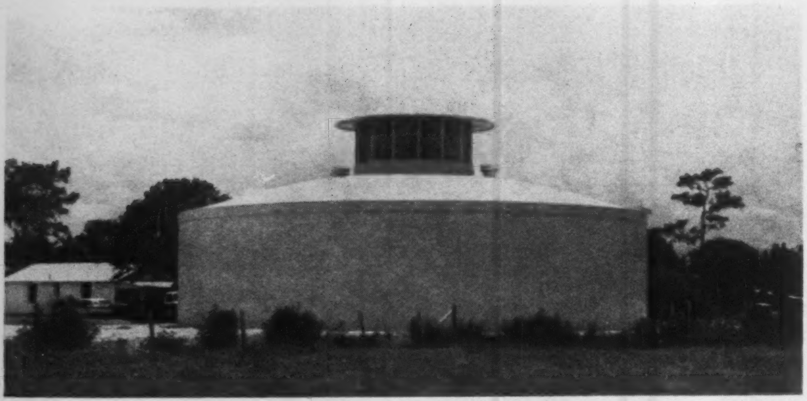
In 1960, 14 of the 88 top contractors obtained more than $150 million worth of new business. This compares to only 12 getting the same amount or more in 1959.

The 14 companies registering a volume of $150 million or more in 1960 hit that category by way of ENR's basic contract awards reports, or on the basis of their own computation, which in some cases includes foreign work and the volume won by subsidiaries.

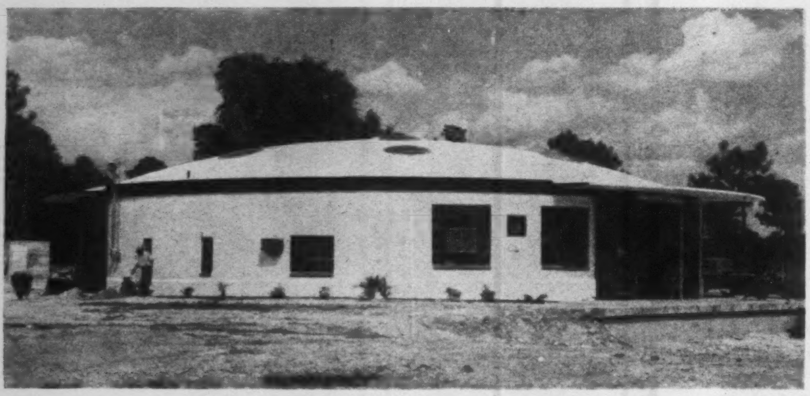
Peter Kiewit Sons' Co., Omaha—largest of all according to ENR's figures—hit top-most position in taking 88 contracts either individually or in joint venture.

The company's smallest contract was for $60,951, a Corps of Engineers job to modify the drainage system on the downstream slope of a dam and install catchbasins, pipes, culverts and manholes.

Kiewit's largest individually held contract was for $30.2 million, a missile-base job at Beale Air Force Base, Calif. The company is also a participant in the $116.5-million Chesapeake Bay Bridge-Tunnel at Norfolk, Va.



Standard Prestressed Tank . . .



. . . Leads to Non-Standard Building

The Crom Corp. of Gainesville, Fla., practices what it preaches. It bought its own product in order to house its new shop.

The product: pre-stressed concrete tanks.

The shop: a modified tank.

Design and construction of the new shop are similar to those of Crom's standard tanks. A typical Crom tank (above) is a 500,000-gal water reservoir built for St. Cloud, Fla. The basic design is a composite steel and sprayed-concrete wall. Workmen erect a thin steel shell against wood formwork. Then they spray concrete on both sides.

Later, a crew prestresses the cylinder with plain or galvanized wire in a continuous helix at 140,000 psi. An additional ¾-in. layer of sprayed concrete protects the wire.

Two inches of peneumatic concrete on 4x4-in. No. 6 wire mesh goes over wood falsework to form the self-supporting dome. Extra windings at the top of the tank wall absorb all the dome thrust.

The new shop building (below) didn't need a steel liner, so workmen applied concrete to plywood forms over rod reinforcing. The 3-in.-thick walls were "shot" in three sections to get the most out of the forms. The roof is a standard Crom dome, with thirteen 5-ft-dia skylights scattered over it for interior lighting. A prestressed band at the dome edge counteracts roof dead loads as in the case of the more usual tanks.

The 85-ft-dia building has about 5,500 sq ft of usable floor area plus a 1,000-sq-ft partial second floor. A 60-ft-long loading platform is partly covered by a 8x40-ft cantilever canopy extending from the dome ring. Three 12x12-ft doors give access to the building.

Crom Corp. says the round building cost only about $5 per sq ft, including the loading platform, interior structures and all mechanical and electrical equipment.

The round style has drawn attention from other businesses. A building-tank job in the talking stage is a group of three of the structures for a furniture store. Two units toward the street would have glass walls for displays, the third would be for storage. It would have no steel liner, and glass, instead of concrete, walls.

Sewage Alchemy

New LA plant will reclaim sewage water for reuse

The Los Angeles sanitation districts last week awarded a $1.4-million contract for construction of the Whittier Narrows Water Reclamation Plant. The 10-mgd installation will be a streamlined sewage treatment plant designed to reclaim and purify water taken from sewage rather than treat the sewage itself.

The plant is a coordinated effort of the County of Los Angeles, the Los Angeles County Flood Control District, the Central and West Basin Water Replenishment District and the Los Angeles County Sanitation Districts.

The county has provided up to $1.7 million for the plant. The sanitation districts handle design and construction and will operate and maintain the plant.

The Water Replenishment District will buy the reclaimed water for groundwater recharge by percolation, thus replenishing underground supplies in the Central and West basins (ENR July 13, p. 28). The Flood Control District will transport the reclaimed water to the spreading grounds.

"Robbing" the sewage of its water will be accomplished in the following manner: Sewage from a 60-in. trunk sewer—carrying principally domestic sewage from the San Gabriel Valley —will be pumped into the plant's primary sedimentation tanks. There will be no bar screens, grinders, or grit chambers ahead of the primary tanks.

Raw sludge and skimmings will be returned directly to the trunk sewer. The remaining effluent will pass through aeration tanks, final sedimentation tanks, and chlorine contact tanks before being discharged as reclaimed water. Activated sludge also will return to the trunk line.

The plant is designed as a standard rate activated sludge unit. The design allows for operation using step aeration, contact stabilization, or variations of these processes.

Purpose of the plant is to demonstrate that such a unit can be economically used to reclaim water from sewage and that the reclaimed water can safely be used to replenish underground aquifers.

John D. Parkhurst, assistant chief engineer for the county sanitation districts, says the sale of water will defray operating costs as well as permit amortization of construction costs within 30 years. Operation and maintenance costs are estimated at $22 per million gallons.

Construction will start within 30 days of contract signing and be completed early next year.

Manufacturer Says Specs Encourage Joist Imports

Macomber, Inc., Canton, Ohio, steel fabricator, has resigned from the Steel Joist Institute after 33 years' membership. The company objected to a new specification permitting higher strengths for open-web joists.

The new standard allows a 30,000-psi working stress for steel with a 50,000-psi yield point, and a 27,000-psi working stress for steel with a 45,000-psi yield point.

Robert Macomber, president of the fabricating company, says that the specification permitting the 45,000-psi steel has opened the steel-joist market to foreign steel. He is disturbed by "such further inroads of foreign steel and the possible results of it." He charges that the history of quality of foreign steel hasn't been satisfactory.

Several U. S. fabricators, including Macomber, Inc., produce joists with cold-formed chords. The cold rolling raises the yield point of the steel. However, the new specification permits hot-rolled angles with high strength obtained by chemistry. Mr. Macomber fears that ordinary carbon-steel angles might be substituted for high-strength angles by mistake and result in grave damage to the entire steel-joist industry.

Mr. Macomber also believes that the 30,000-psi allowable stress is too high for joists with hot-rolled or cold-formed chords. He points out that the Cold Roll-formed Structural Framing Institute Specification calls for a 47,000-psi yield strength with a design stress of 28,500.

Corps Considers Study Of Pumped-Storage Sites

A one-year study of potential pumped-storage generating facilities, at existing and future federal water storage projects, has been proposed for the Corps of Engineers. The House Appropriations Committee is expected to recommend $225,000 to carry it out.

Maj. Gen. W. F. Cassidy, director of Corps civil works, said the study probably would involve 125 Corps reservoirs, primarily in the Ozark plateau und the southeastern states. The general study would be reconnaissance in scope, to pick all possible sites and make preliminary studies of the most promising. He added that the detailed study of an average individual pumped-storage project might cost an extra $35,000 and take an additional 18 months.

Special authorization—of a resolution from either the Senate or House Public Works Committee—would be needed to make the general study. The Appropriations Committee has merely proposed it and asked the Corps what it would cost.

Around the World . . .

- **Renewal in the Orient**—A Japanese firm has embarked on a $60-million rebuilding program in downtown Tokyo. Two years ago the Mitsubishi Real Estate Co. started demolishing a group of about 20 outmoded brick structures and replacing them with air-conditioned office buildings.

- **Ontario's biggest project**—The government of Ontario last week approved the biggest conservation project in provincial history. The $38.9-million, 10-year project will provide for construction of dams and reservoirs and the preservation of 7,000 to 8,000 acres in the metropolitan Toronto area.

- **Water for Mexico's farmers**—Mexico's Department of Water Resources is starting a $35-million irrigation program that marks the beginning of a broad plan to rehabilitate and extend 65 existing irrigation systems, serving nearly 7.5 million acres.

- **Cheyenne OK's 42-mile aqueduct**—Voters in Cheyenne, Wyo. have approved an $11-million bond issue to finance a 26-in. steel water transmission line to bring water to Cheyenne from Douglas Creek nearly 100 miles away.

- **International open**—A competition to design a 60-story skyscraper in Buenos Aires will feature a first prize of 5 million Argentine pesos ($57,000) with nine other prizes totaling 8 million pesos. For forms write to The Assessor, Federico A. Ugarte, Architect, Calle Montevideo No. 942, Buenos Aires, Argentina.

- **Big job, big saving**—Final cost of Yankee Atomic Electric Company's A-power plant will be almost 25% below original estimates, says William Webster, president. Estimated cost was $57 million; final outlays will be $43.7 million. The plant at Rome, Mass., went into commercial operation last Saturday.

Collapses Kill Two, Injure 14

Construction collapses in New York City and Saginaw, Mich., last week killed two construction workers and injured 14.

In New York, a steel erection accident on the 59-story Pan Am Building killed one steelworker and injured another seriously. An 8-ton girder being lifted to the third floor by a truck crane whipped out of control and crashed into the 75-ft boom and buckled it. A 500-lb steel counterweight ball, set swinging and cut loose from the load line, killed a man as it caromed through the framework.

The dead steelworker had been bolting beam connections from a platform at the second floor level. The counterweight ball crashed through the second floor planking as it fell.

American Bridge Division of the U. S. Steel Corp., the fabricator-erector, is investigating. Diesel Construction Corp. is the general contractor.

In Saginaw, an 8,000-sq-ft area of steel roof framing for a $6-million high school collapsed, killing one construction worker and injuring six others.

One of five men working under the deck was killed when a falling beam crushed his skull. Four others were injured.

Only two members of a seven-man crew pouring the gypsum deck were injured when the roof framing gave way. Six workmen rode the roof to the ground, while the foreman grabbed a girder that did not collapse.

The dead man, Peter M. Beach, 18, was the son of an associate architect on the project. A student at Yale University, he was working as a summer employee of the excavating subcontractor.

Construction workmen said that 50 men and more had been working under the roof on several occasions that day.

The roof framed a one-story locker-room building. It comprised steel beam and joist framing with poured gypsum deck on sheetrock. The gypsum pour was three-quarters completed over the 84x96-ft area when the framing collapsed.

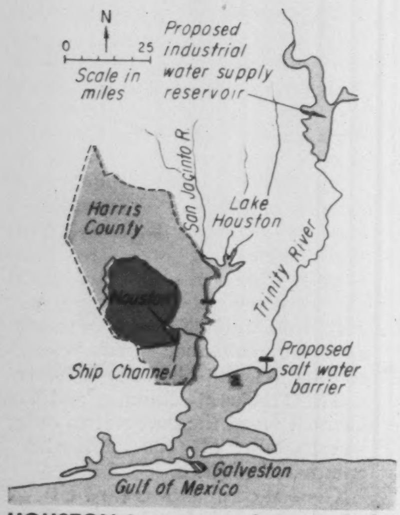
Architect-engineers Caudill, Rowlett & Scott of Houston attributed the collapse to "accidental horizontal construction loading." It may have resulted from horizontal inertial forces caused by the workmen moving around on the deck, from a sudden wind, or accidental impact by construction equipment, according to architect Wally E. Scott.

The Tri-County Building and Trades Council urged the governor to order an investigation of the possibility of criminal negligence.

General contractor is J. A. Utley Co., Royal Oak, Mich. Gypsum Erectors, Inc., is subcontractor pouring the gypsum roof deck.

Fitting Cities to the Future:

Houston: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0
25
Scale in miles
Proposed industrial water supply reservoir
San Jacinto R.
Lake Houston
Harris County
Houston
Trinity River
Proposed salt water barrier
Ship Channel
Galveston
Gulf of Mexico

HOUSTON has space and water. It has adjoining counties to expand into and a Ship Channel making it a seaport.

Houston has no zoning law.

Houston has no master plan.

Houston has no use for government meddling in urban renewal.

Houston thus would win no popularity contest with professional city planners.

But Houston doesn't care. This metropolis on the prairie—largest city in Texas and seventh in the nation—goes right on growing. Houston has found its own way.

What's Houston's way? Broadly, it's to encourage private interest to pay for improvements through private enterprise. It's to let freedom reign.

Houston believes in the "people and the interests," believes they'll be guided, as they invest in the city's future, by enough civic pride and business acumen to avoid violating essential planning principles. Example: Houston doesn't demand off-street parking; yet builders provide it.

Actually, Houston's growth is not as freewheeling as its citizens let outsiders think; there are safeguards against unbridled freedom:

The Chamber of Commerce, much as it is a promoter of Houston, is a force for proper commercial growth.

The Planning Commission and City Planning Department, deprived as they are of zoning codes and master plan, do effectively control subdivisions, locate thoroughfares and plan land use.

Yet, the spirit of free enterprise prevails. And leaders in Houston credit it generously for the dynamic growth that is fitting their city for the future.

• **Blessed by nature**—Houston sits on a plain with unlimited opportunity to expand in any direction. Bayous converge on the city to join the Ship Channel, but these offer no real obstacle. (These bayous, improved by engineering, are actually a part of the drain-

Loose Rein for Growth

age system of the flat-land metropolis.)

Water supply abounds for the tapping in one of the world's largest underground sources, right under the city. New subdivisions, outside the city limits in any direction, can find ready-at-hand well water.

Oil, gas, salt, sulphur and oyster shell also abound and spark Houston's industrial growth, which in turn has brought payrolls and people.

Finally, the Houston Ship Channel—provided by nature as Buffalo Bayou and first deepened by man to 25 ft—makes Houston a deep-sea port. The city decided the channel should be deepened in 1910, and when the federal government demurred, Houston raised half the needed $2.5 million by a port bond issue.

(The federal government has since spent millions on deepening the channel to 36 ft, widening it to 300 ft, for 50 miles down the bayou and across Galveston Bay to the Gulf. But Houstonians, proud of their original investment, point out also that the federal government got its money back in a single three-year period from customs collections.)

• **Spurred by citizenry** – Houston's Chamber of Commerce spearheads the demand for growth by a development-minded citizenry. No new citizen organization has been needed.

Houstonians organized their Chamber of Commerce only four years after they founded their city in 1836. They've seen it as a sort of guardian of Houston's future ever since.

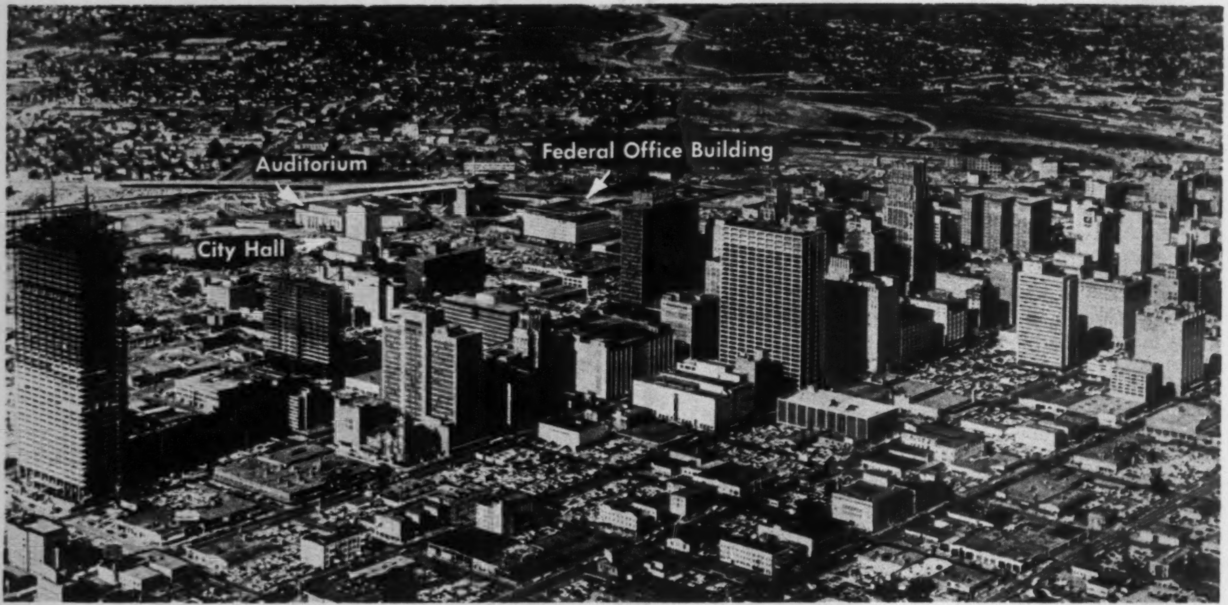
The Chamber watches for community problems, tries to spot them before they get troublesome and goes to work on them. Its efforts in planning, legislation and financing make it a politically independent but experienced sounding-board for all levels of government serving the City of Houston.

It pushed for the port; it fostered the medical center; it made early expressway plans; it has brought industry to Houston; and in one of its most recent and far-seeing efforts, it has led the fight to secure state approval of a new Trinity River supply of industrial water.

Finally, it has established the philosophy that Houston's citizens should pay for their city's development—by gifts, bond issues and taxes. And it keeps the citizenry fired up about growth. As Marvin Hurley, executive vice president of the Chamber, says: "We have never looked to economic manna from other sections to do the job for us."

• **Governed by self-reliance**—It takes public agencies to make even Houston's private enterprise philosophy work,

(Please turn the page)



HOUSTON'S SKYSCRAPER ROW, spreads from older business district at far right, faces Civic Center planned for 1980 completion.

when it comes to specific projects. The public arms of development are the City Planning Commission, the City Planning Department and the Department of Public Works.

The Commission, appointed by the mayor, has private citizens serving without pay—initiating, advising, reviewing. M. E. Walter, vice president of the HOUSTON CHRONICLE, has served for many years as its chairman. The Commission, in turn, is guided by the City Planning Department, headed by an expert planner, Ralph S. Ellifrit. The third arm of development, the Public Works Department, not only carries out plans but also gets into long range planning; its director, Eugene Maier, is an ex-officio member of the Planning Commission.

In one respect the Houston Planning Commission differs from some of its counterparts elsewhere: It has authority, granted by state legislation, to control all subdivision planning not only within the city limits, but also in an area extending five miles beyond. Through this authority, and through its recommendations on parks and schools, the commission exerts a powerful influence on the development of the city.

It is Houston's orderly planning and development machinery, superimposed on the philosophy of self-reliance, that has made progress to date and fixes Houston's confidence in its future.

• Downtown deterioration avoided — Despite the absence of any physical or governmental barriers to spread, Houston has kept its central business district intact, hub of city development.

The central business district covers a rectangular area about one mile east to west and 1½ miles north to south. A rectangular grid of wide streets, a boon to traffic movement, divides the area into blocks 250 ft square.

Originally, business concentrated at the north end of this area. But during the past decade, business has spread south along the west side of the central business district—probably because of the advantage of facing the large park-like Civic Center.

The boom in new buildings in the business district is pinpointed in the accompanying box and photo. And there is room for many more large buildings before this central business district will be crowded.

Biggest commercial building project of all (not shown in photo) is the $125-million Cullen Center. It will cover 5½ city blocks, about 12 acres, and include three office buildings, two apartment towers, a hotel and a parking garage.

The first office building, called the 500 Jefferson Building, is a 21-story structure to cost $12.5 million; it is now under construction. Preparations are being made to start this summer on the hotel, a 12-story, $6-million struc-

Houston's Boom Is a Steady Roar*

- **Population, 938,219 in 1960, is up 57% since 1950, up 140% since 1940. (All large U.S. cities except Houston and Los Angeles showed population losses in the 1960 census.)**
- **Area, 349 sq mi in 1960, is twice 1950's area and five times 1940's. Only Los Angeles is larger. (Whether increase in area constitutes progress or urban sprawl is debatable, but it is surely a measure of growth.)**
- **Tonnage moved on the 50-mile Ship Channel between the city and the Gulf of Mexico makes Houston the nation's No. 2 port.**
- **Industrial growth on the Ship Channel has lined it with $2 billion worth of plants in 20 years.**
- **Skyscrapers still sprout so fast that recently $200 million worth were under way at once.**
- **Non-residential consumption of electricity in 1960 was 5.5 billion kwh —nearly four times what it was in 1950.**
- **A 142-acre Medical Center has grown in 15 years to more than a $120-million investment (exclusive of land values).**
- **A 130-acre Civic Center is planned to include a bus station and heliport, as well as new government buildings.**
- **Construction awards, bank credits, water meters in service—all these measures of growth have doubled in ten years.**

This headline, first used in ENR in 1950, still holds for Houston, as the above sampling of attainments indicates.

ture to be called Hotel America. Its structural steel frame is now under design by Lockwood, Andrews & Newnam, consulting engineers of Houston. Architect for the entire Cullen Center development is Welton Becket & Associates.

Other hotel construction includes modernization of the well known Rice Hotel; plans for an 8-story Continental Houston Hotel; a 10-story Old Market Motel. Builders also plan a 24-story apartment building. A 28-story, $15-million Sheraton-Lincoln Hotel is under contruction; the nine-story, 310-room Towers Hotel recently opened.

Supplementing all this private investment that is transforming downtown Houston, there is government activity in the adjacent Civic Center that will alter the appearance of that area for the better. Current construction is confined to the federal government—a 12-story, office building and a 5-story central post office—but the City Planning Department has a master plan for the area which envisions other improvements.

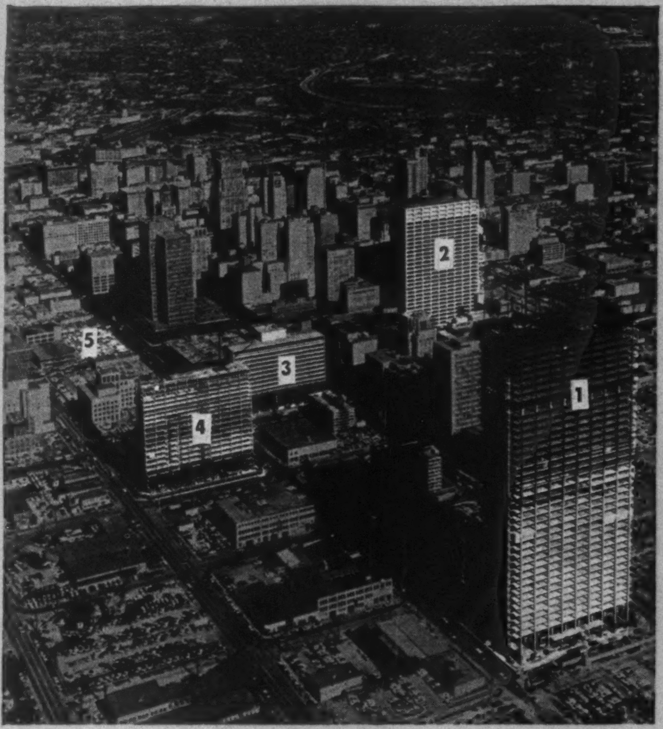
At present the site contains 130 acres on which are located the city hall, the combined music hall and coliseum, the library, old criminal courts building, a fire station and the central water plant. The rest is mostly parking area. Plans include an addition to the city hall, a state office building, a city and county health building and a new coliseum. At the north end of the site, where an old railroad station recently has been razed, the new central post office is being built. A heliport is also included in plans for the Center.

To make all this possible, and to keep the facilities spaced by gardens and pedestrian malls, eight more acres must be acquired and cleared of rundown private buildings. A campaign for this land purchase is now under way. It is the planning commission's conclusion that the Civic Center site will be adequate for public buildings to serve Houston 20 years hence, when it is estimated that its population will have doubled again.

- **Outlying business centers**—Although Houston has successfully anchored most of its big business offices and a lot of its shopping facilities downtown, there has been much development of outlying shopping centers—some of them notably large.

But what Houston has experienced in at least two cases—perhaps as a result of the relative freedom granted private enterprise to make its own mistakes and successes—is a different kind of outlying business center. One is well established and growing. The other is just getting under way.

The established business community lies some 3 miles south of the central



New Downtown Buildings Show Houston's Boom Best

1. 44-story Humble Oil & Refining Co. building, to be finished next year and cost $32 million, will be tallest in the western U. S. Welton Becket & Associates designed it; W. S. Bellows Construction Co. of Houston is the builder (see p 41).

2. 32-story First National City Bank building, completed last year. Connected by tunnel to its own 7-story garage. Has a glass-enclosed one-story wing as its lobby. The building's tower has glass walls set back of its concrete—incased steel frame. Skidmore, Owings & Merrill of New York City associated with Wilson, Morris, Crain & Anderson of Houston are architects. W. S. Bellows Construction Co. built this $20 million skyscraper, too.

3. 10-story, $5.5 million Americana office building, is now being occupied.

4. 28-story Sheraton-Lincoln Hotel and office building approaches completion at a cost of $15 million.

5. 33-story Tennessee Gas Transmission Co. building, to be started soon, will nose out by 46 ft the existing Gulf Oil Building, Houston's second tallest after the new Humble Building. The $25 million tower will be enclosed in glass and amodized aluminum. It, too, will connect by tunnel to a 7-story garage. Architect: Skidmore, Owings & Merrill.

. . . plus all these others not keyed in the photo

- The American General Insurance group has just announced it will soon erect a headquarters consisting of at least one structure, and more probably two or three harmonizing buildings. Total investment is expected to fall between $12.5 million and $20 million, and architectural and engineering work is scheduled to be well under way before the end of 1961.
- 21-story 500 Jefferson building and 12-story Hotel America under construction in $125 million Cullen Center.
- 16-story annex to Texaco Building, cost $18 million and now complete.
- 13-story twin to Century Office Building under way, to cost $4.2 million.
- 11-story, $2.8 million World Trade Center of the Houston Port Commission, under construction.
- 12-story, $17 million federal office building, nearing completion.

business district, where millionaire Glenn McCarthy put up his Shamrock Hotel in lonely splendor. Finally, the Prudential Life Insurance Co. built a 22-story office building not far away. In the meantime, the nearby Medical Center grew in an astounding manner (current construction totaling more than $30 million will increase total value to about $120 million exclusive of land), residential neighborhoods sprang up, and today the area between the Shamrock Hilton and the Prudential Building is actively being considered as the site for at least two more tall buildings. One of these is the 14-story Fannin State Bank building to cost $4 million and now under construction. Another, to be owned by the Siteman Corp., would be a 20-story office structure to cost $10 million. A new hotel across the street from the Shamrock, The Towers, has been opened, and plans for a $2-million, 8-story doctors office building have been announced.

This area has become such a crossroads for traffic that the city has awarded a contract for two underpasses to eliminate the crossings at grade of a main east-west boulevard and the two north-south streets that traverse the area. The plan is to have these traffic facilities completed by the time that the construction of tall office buildings transforms this area into a skyscraper-dotted satellite business district.

The second satellite business area is just getting started about 5 miles west of the central business district and adjacent to a completed section of one of the freeways. Called Post Oak, it is given special character by announced plans to build twin 10-story apartment buildings connected by a large retail commercial area, the whole to be located on a 13-acre site. Also announced for the development is a 10-story office building.

Houston also has (in its Sharpstown and other centers) large but more normal types of outlying residential-commercial development.

• Medical center—Houston's dependence on and success with private enterprise investment shines no brighter than through its complex of hospitals, schools and research facilities, called the Texas Medical Center. It began 14 years ago.

Today, buildings owned by 18 different organizations add up to an investment of about $94 million. All have been privately financed, and another $30 million worth of buildings are under construction or scheduled to be constructed in the near future on the same basis. (These totals do not include land values.)

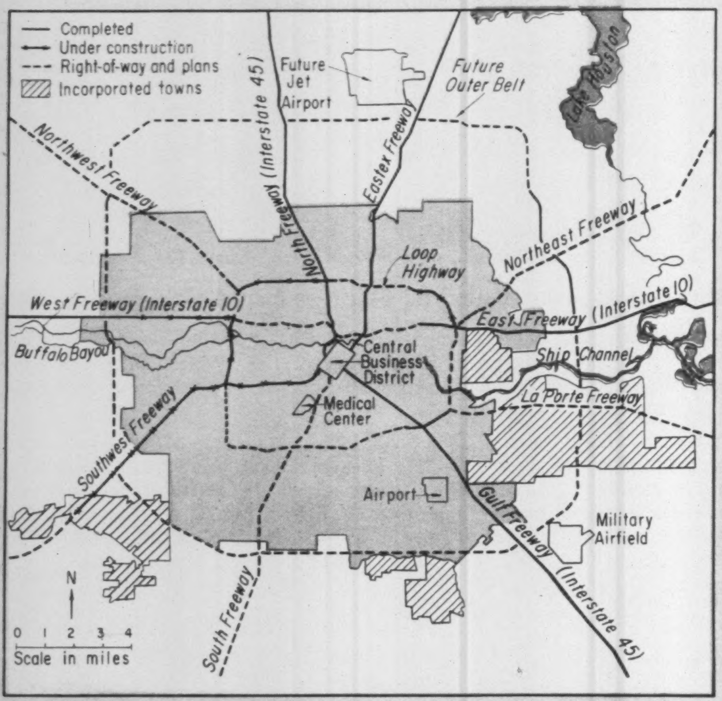
• Freeways shape city—To tie the central business district, the outlying developments and the vast spread of residential areas together into a workable metropolitan complex requires an efficient highway transportation network. And through close and continuing cooperation a remarkably complete freeway system has been laid out (see map and box).

The freeways planned for Houston and Harris County will cost an estimated $400 million: $250 million for the Interstate system, the remainder on primary state routes. All these freeways not only fix the channels of traffic movement into and out of Houston, but also affect the nature and location of the city's expansion.

Two aspects of the freeway system are noteworthy:

Since a basic purpose of the system is to channel traffic into the central business district, great care has been exercised to avoid congestion at the exits. This is accomplished by widening the freeways from 8 to 10 lanes some distance out from the center and then funneling this traffic off at a number of ramps so that it can be distributed among a number of streets.

(Story continues on p. 35)



Houston's Freeways Go Out and Around

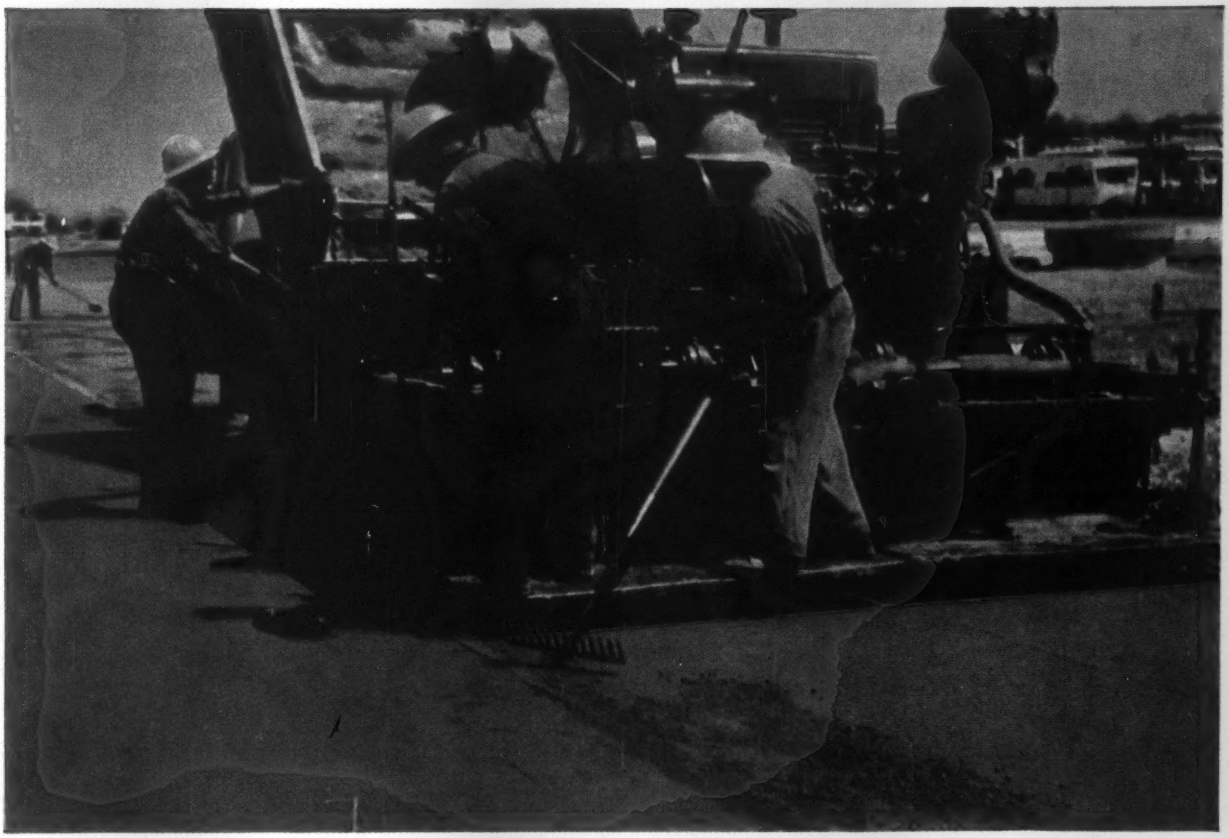
• Total length will be 243 miles. 75 miles are in service.

• Ultimate plan includes nine routes radiating from central business district.

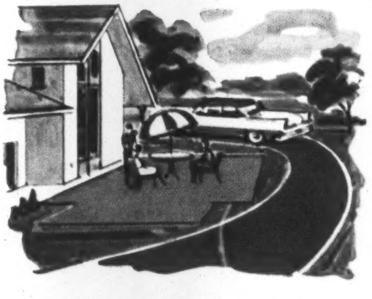
• There is an inner loop freeway about ¾ miles from center, an outer loop 6 miles out and an outer belt 15 miles out. Only the outer belt is far in the future.

• Interstate system roads form the backbone of the freeway system. North-south Interstate 45 is routed so as to form the south and west sides of the central business district inner loop. Non-Interstate radials form the other two sides.

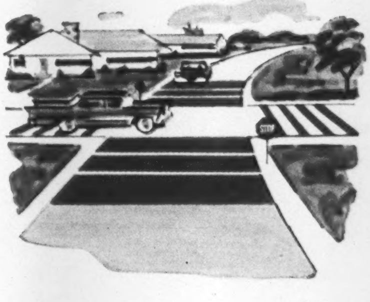
• The outer loop is the Interstate bypass around the city (although well within the city limits). Starting at Interstate 10 on the east it circles around to an intersection with Interstate 45 on the south. Only the east side of the loop is non-Interstate; it will not be built immediately, but has been located and designated a state highway to control subdivision planning. It will include a high-level bridge over the Ship Channel.



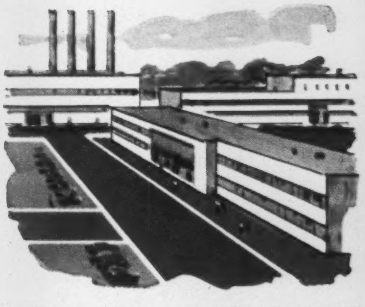
new Viadon* and Miradon* put color into paving



NEW DESIGN OPPORTUNITIES: Driveways, tennis courts, patios, pools and parking lots can now be surfaced in pleasing colors.



TRAFFIC SAFETY: Curbings, crosswalks, centerlines, speed zones and turn-offs can be permanently indicated in color.



FACTORIES: High-strength flooring in different colors distinguishes danger zones, exits, assembly areas, etc.

Viadon and Miradon, developed by Esso Research, bring you *permanently* colored paving in red, green, blue, yellow-gold and white. The color is built in—it cannot wear off. Miradon is especially recommended where high resistance to fuels and oils is needed, such as service stations and airport landing strips, loading zones and parking areas.

These remarkable new materials can be mixed in standard asphalt pugmills and laid with existing equipment. They will not set permanently in transit; can be softened by heat if desired. No special storage facilities are needed.

For more facts about this designer's dream-come-true, or for technical assistance in applying Viadon and Miradon, write us at 15 West 51st Street, New York 19, New York.

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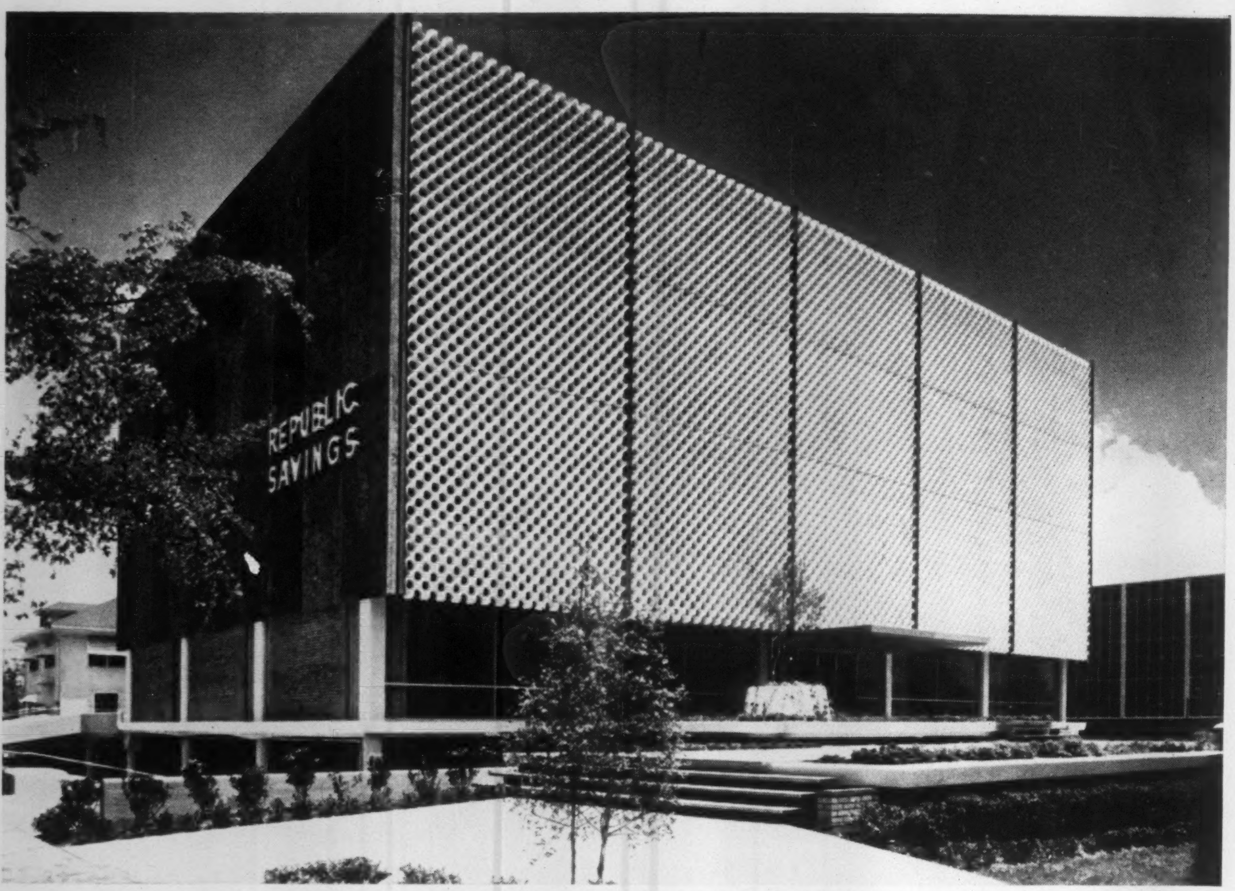

Republic Savings and Loan Association Building, Dallas, Texas. Architects: Fisher & Jarvis, AIA, Dallas. Engineer: Edward L. Wilson, Dallas

Cited for design excellence by the Texas Society of Architects . . .

modern concrete building blends spectacular beauty with practical economies

Selected as an outstanding example of contemporary Texas architecture, the new Republic Savings and Loan Association Building was chosen for exhibition during the State Fair of Texas.

Among many interesting features, the 4-story structure with lower-level parking is distinguished for its graceful honeycomb cast concrete solar screen. It shields the massive southern exposure against peak solar heat loads—yet admits plenty of daylight. Its design reduced air-conditioning requirements by 10 tons, saving $6,000 in equipment plus continuing savings in operating costs.

Fashioned with white portland cement, the lacy solar screen provides a pleasing contrast with adjacent precast concrete panels of brown and cork-colored marble aggregates. Even the concrete terrace steps and floors add decorative interest with their exposed aggregate surfaces.

Structural strength, fire-safe qualities and construction economies were important factors in the choice of concrete for this building. Time, labor and money were saved with the multiple use of forms in the building of concrete frames and pan joist floors. And because of concrete's ready availability, there was no time lost in scheduling.

From every point of view – construction efficiency, beauty, durability and low maintenance costs—modern concrete delivers more for the money!

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A national organization to improve and extend the uses of concrete

**FOR STRUCTURES...
MODERN
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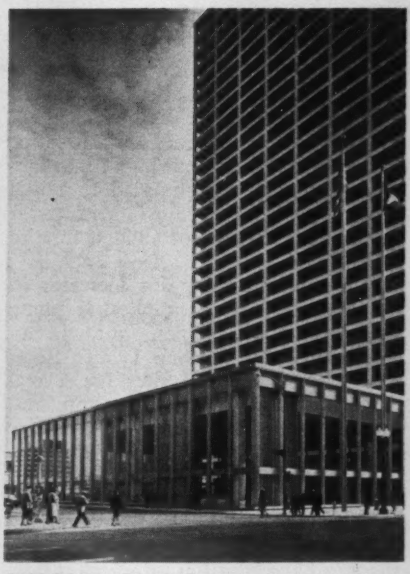
PARKING GARAGES are a part of most major new buildings. In this Professional Building, floors 2 to 5 are for parking. It's sometimes next door.



EXPOSED FRAME shades First National City Bank windows. Lobby is a wing.

The result, it is claimed, is that traffic problems are less severe downtown today than they were a decade ago.

The second special aspect is that the grade separation structures are invariably founded on concrete filled shafts belled out at the bottom and extending above ground as columns. Some of these shafts extend as much as 80 ft deep; some also extend to heights of 60 ft above ground.

With one exception, all freeway right-of-way (both on the Interstate and primary systems) has advanced to the protective buying stage in Houston and out into Harris County. The exception is the portion of Interstate 10 between the inner and outer loops. As the map shows, portions of some of the radial routes are completed.

There is a reasonable hope that the progressive development of Houston's extensive freeway system, along with normal improvement and extension of existing streets, will keep pace with business and population growth. But if population increases nearly 60% in this decade as it did in the preceding one—from the present 938,000 to 1,500,000—and industry's rate of growth continues, there are other areas of development that will need attention.

• **Jet airport being planned**—Although Houston's present airport in the southeastern part of the city accommodates jets in a modern terminal which has been expanded almost continuously since completion in 1956, it is fast approaching its capacity. So Houston has acquired a 3,100 acre site 15 miles north of the business district and is purchasing an additional 3,000 acres of property. It has engaged a group of consulting engineers to develop a master plan for a new intercontinental supersonic-jet airport.

(Interestingly enough, 3,126 acres of this land [then thought to be ample] were purchased privately some years ago by a group of wealthy, civic-minded citizens to forestall its being turned to residential or industrial use. They held the land until Houston would be in a position to purchase it for a new airport; last year they turned it over to the city at its original cost.)

According to the consulting firms developing the master plan (Turner & Collie; Lockwood, Andrews & Newnam; and H. E. Bovay, Jr. and Associates) this is the only new airport in the country, other than the federal government's Dulles International Airport for Washington, D. C., that is being specifically designed for jets.

It will have two parallel instrument runways, 12,000 ft long and 6,000 ft apart oriented E-W, and an additional runway of equal length oriented SE-NW. The terminal area will be located between the parallel runways. Maintenance shops, hangars and other revenue-producing facilities will be placed in the far southeast corner of the site. The main automobile entrance can be on either the east or south, the latter entering from the proposed outer-belt freeway.

Jetero Airport, as it is presently called, is some years away from actual use, but Houston has taken first steps to assure that in air transport, too, the city is fitting itself for the future.

• **Huge new water supply**—No city can be ready for the future without an adequate water supply. Here again Houston has exercised foresight. The bulk of the city's domestic water comes from about 75 wells with an estimated yield of 220 mgd. In addition, since 1954 when the city dammed the San Jacinto River to create Lake Houston, 150 mgd of surface water has been available from this source—half for domestic use and half for industry.

Houston's most pressing need is for industrial water, since existing industry is using all of its allocation from Lake Houston as well as drawing heavily on the underground supplies with its own private wells.

The water supply committee of the Chamber of Commerce called attention to the problem some seven years ago, and subsequently Houston had an engineering study made by Brown & Root. The study emphasized that industrial growth would be slowed unless a large new water supply were made available. It recommended that water supply be developed by a reservoir on the Trinity River about 75 miles northeast of the city.

Last year the city reached an agreement with the Trinity River Authority. This is a privately financed agency created in 1955 by the state legislature to have jurisdiction over the river's development. It initially focused on dams in the Dallas area and navigation from the mouth up as far as Fort Worth. The 1960 agreement, however, permitted Houston to build a $30 million dam on the Trinity near Livingston to impound 1,750,000 acre-ft. It also required that the city participate in construction of a salt water barrier dam near the mouth of the river at an additional cost of $9.5 million. The State Board of Water Engineers approved the plan and agreed to issue the necessary permits.

(Please turn the page)

Water from the Trinity River dam will be released into the river to be picked up downstream and pumped into a canal that would carry it to the industrial area along the Ship Channel. The project will afford a source of supply for industry anywhere in a nine-county area. It is estimated that this new supply will provide industry with 1.2 billion gal daily, or enough for the next 50 years.

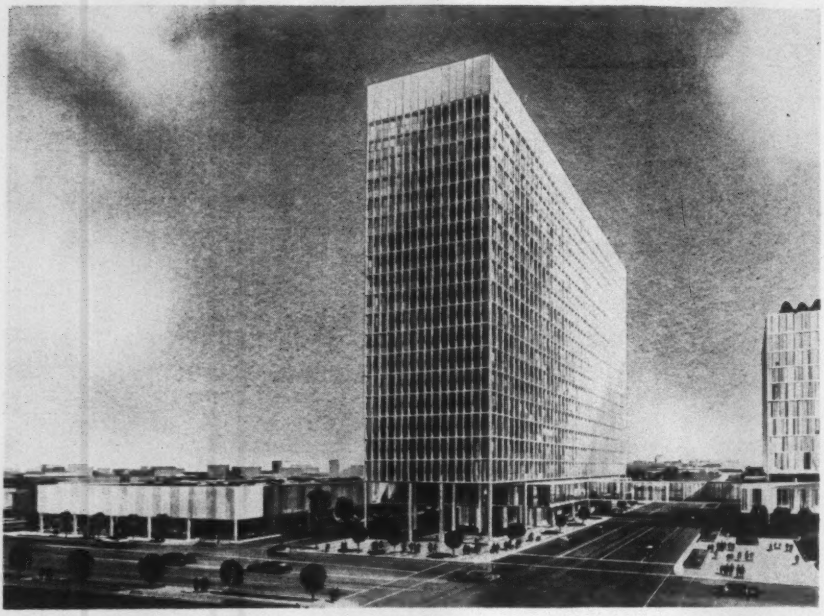
Houston's planning for increases in its domestic water supplies is along somewhat similar lines, but via an agreement with the San Jacinto River Authority. There are sites for several dams upstream of Lake Houston, and the first one to be built, on a tributary of the San Jacinto near the town of Conroe, would store enough water to furnish 70 mgd. To help the Authority finance the work, Houston is buying 25 mgd from the Authority's present share in Lake Houston for which it pays about $225,000 per year.

• **Thorny problems, too**—Houston is not only conscious of its needs for the future, but has taken a number of constructive steps to meet them. Nevertheless, thorny problems remain, and perhaps the worst of them is Houston's lack of a zoning law. Zoning, at least for many years, was considered alien to the philosophy of freedom.

Lack of zoning laws caused many residential suburbs to be located outside the city limits, where they could protect themselves, even become incorporated communities to avoid being annexed by Houston. As these communities grew, they annexed more land—to such an extent as to endanger Houston's expansion. In self defense Houston went into the expansion business itself, soon encompassing more land than it could economically service immediately with utilities and streets. The result is that urban sprawl is about as complicated in Houston as any place in the country.

Zoning would have largely prevented this problem. The Planning Commission, Chamber of Commerce committees and others have favored zoning in recent years, but opposition has been too strong to overcome. Incredibly, the City Council has the power to institute zoning without recourse to voter approval, but has not considered it politically feasible to take the step following a straw vote taken in 1947 in which a zoning proposal lost 3 to 1.

As the lack of zoning in Houston continued to cause the incorporation of more and more towns in Harris County, another problem was created—a multiplicity of governments, each going its own way without great concern for the problems created by metropolitan growth.



FIRST UNIT OF CULLEN CENTER, a 12-acre, $125 million office and hotel development in downtown Houston, will be this one called 500 Jefferson Building.

To stop this growth of new towns Houston once considered annexing all of the remaining 1,333 sq miles in Harris County, but has now abandoned the idea in favor of attempts to strengthen the county government to exercise over-all control. A commission established by the state legislature in 1955 recommended adoption of a county home rule amendment to the state constitution, and a committee of the Chamber of Commerce has been working to get other Texas metropolitan areas interested in the question.

Effective drainage, with its corollary of flood control, is another problem that Houston has not been able to solve fast enough. A more effective county government would help here, since it is the Harris County Flood Control District that is charged with the principal responsibility of rectifying, cleaning and lining the bayous that traverse the area. The District has to work with bond issues voted for each particular job, and this makes for slow progress. Federal funds, in so far as flood control on the major bayous is concerned, have been available through the Corps of Engineers, but there is still the problem of ordinary drainage, which in an area as flat as Harris County is a huge one. A preliminary study pointing toward a master flood control plan is now being made for the county by Turner & Collie.

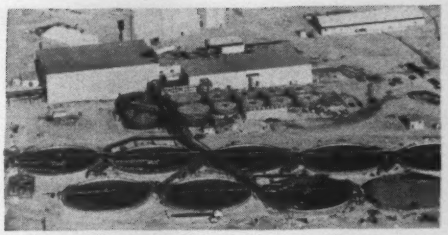
Finally, there is the problem of urban redevelopment. Because its major growth has been so fast and relatively so recent, Houston is not troubled, as are some cities, with seriously deteriorating areas. Yet, without zoning, and as the deed restrictions on residential areas run out (usually after 25 years), the danger of deterioration will increase. The availability of new land for expansion will make it easy to abandon an area that is on the downgrade for a new one.

Something similar to this has already occurred in the central business district. Originally, commercial buildings and hotels were concentrated in the north end of the district. As these facilities become inadequate or obsolete, they are not replaced, but supplemented by new structures farther south. The current construction is thus creating an entirely new business area, leaving the old one behind.

Urban redevelopment is needed in this old north end. However, there is no inclination to invoke government aid, either state or federal, in an over-all attack on this area. The confident expectation is that individual private interests will undertake the necessary reconstruction. While the planning authorities recognize the existence of a growing urban redevelopment problem, they are unable to do more than point it out and encourage increasing response from private enterprise.

All these thorny problems would in most other cities be the dominant issues of public discussion. In Houston they are worked on, but emphasized less than are the factors that are favorable to growth. Thus apparently is created the atmosphere of exuberant optimism, in which private enterprise and self reliance have flourished to keep Houston growing. And as a consequence Houston still banks on its formula—let freedom reign—to solve its problems of the future as it has done in the past.

Before you buy any storage tank...



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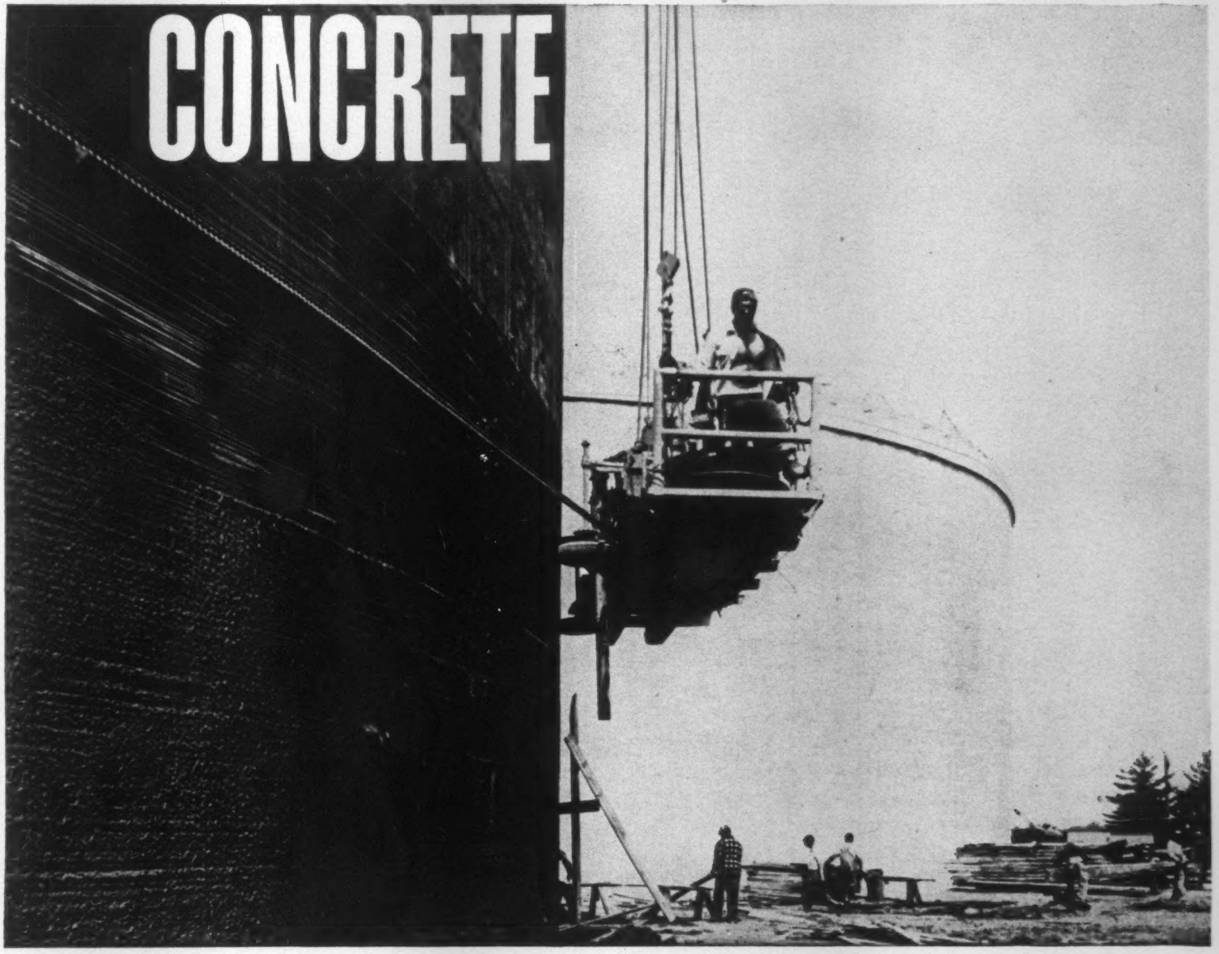

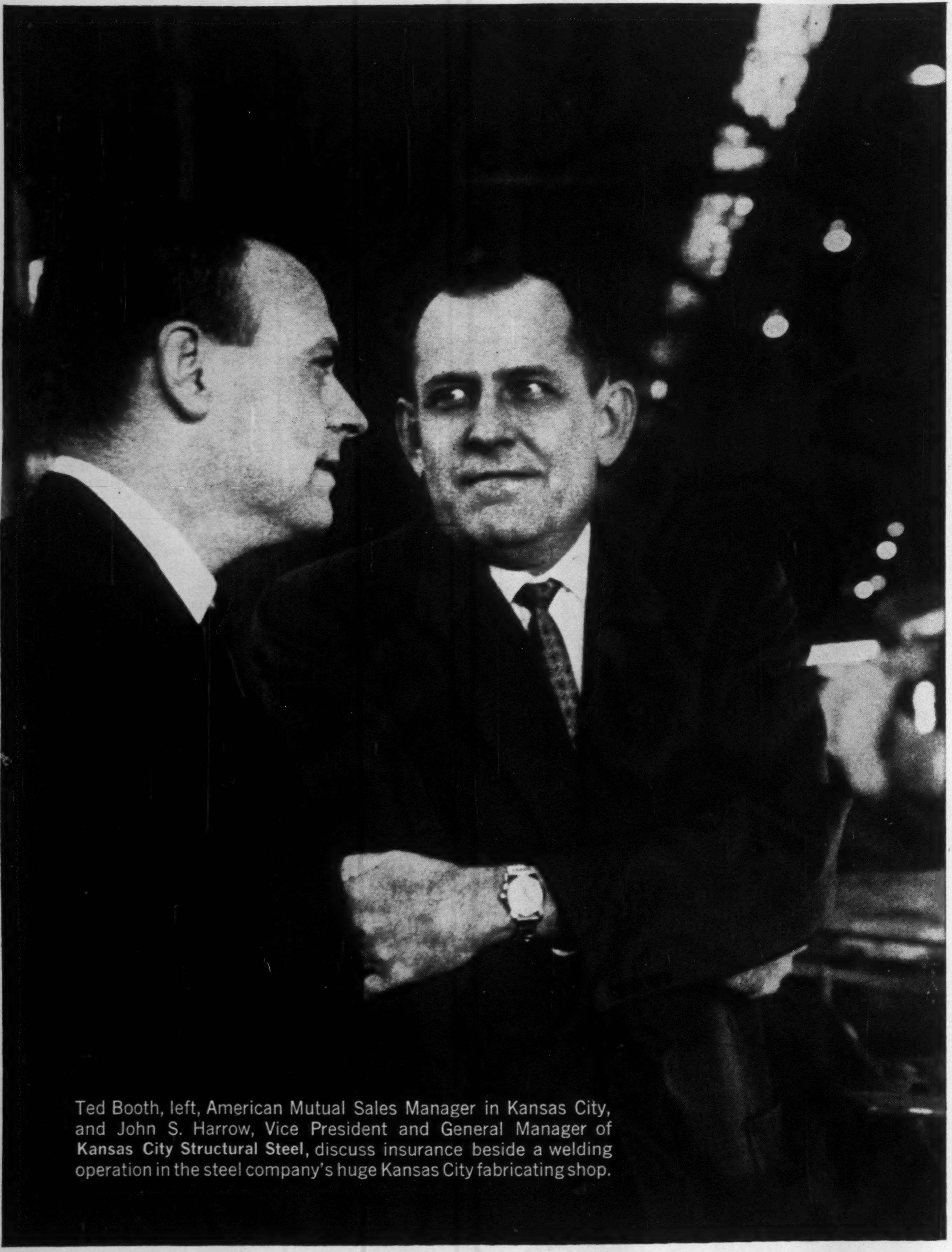

Ted Booth, left, American Mutual Sales Manager in Kansas City, and John S. Harrow, Vice President and General Manager of **Kansas City Structural Steel,** discuss insurance beside a welding operation in the steel company's huge Kansas City fabricating shop.

"I like a man who can save us money"

John S. Harrow, Vice President and General Manager of ***Kansas City Structural Steel Co.,*** major steel fabricator, says, "Ted Booth of American Mutual is a man who saves us money. With his help we've improved our coverage and brought our company's Workmen's Compensation rate 14% below industry average, over the past five years."

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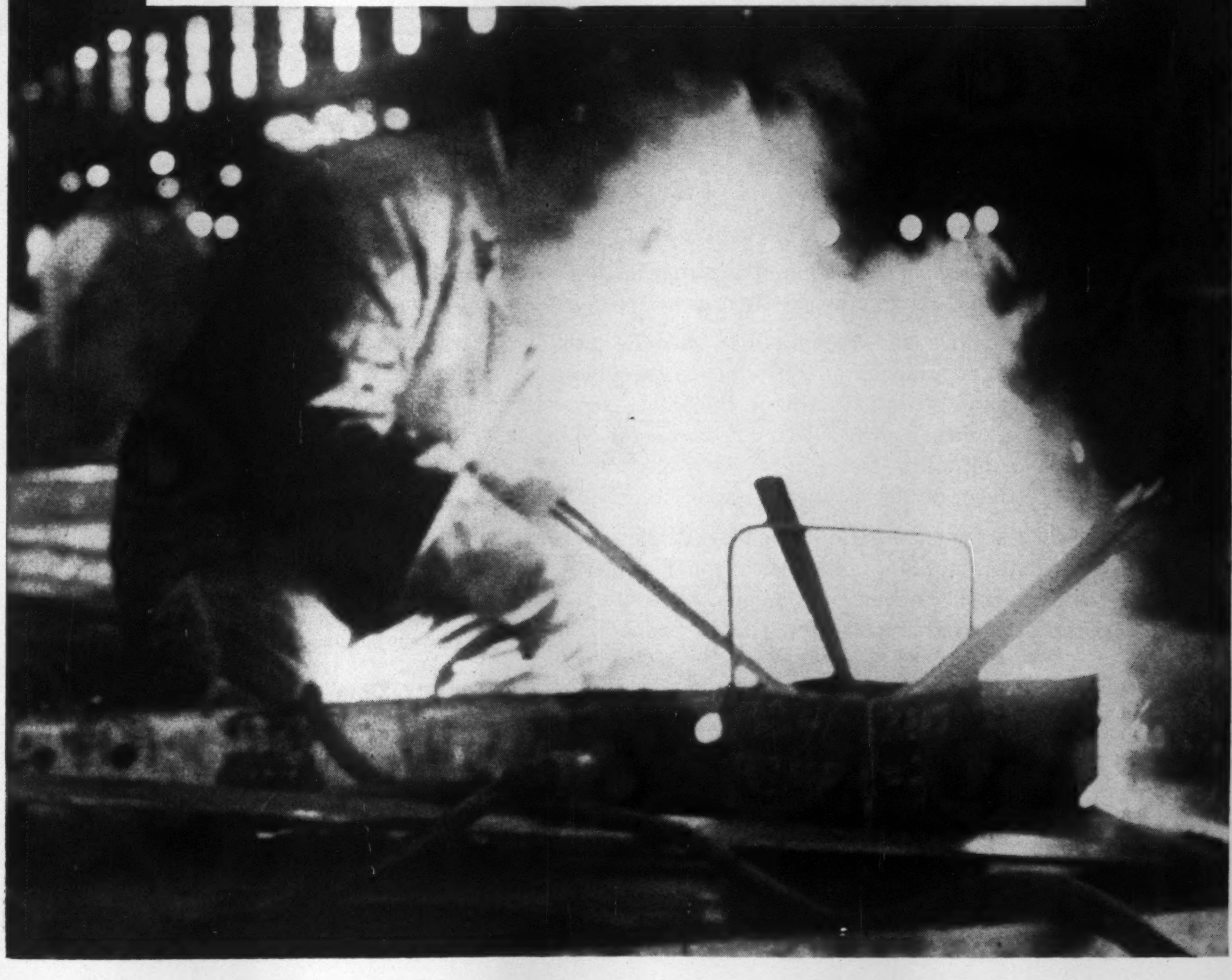

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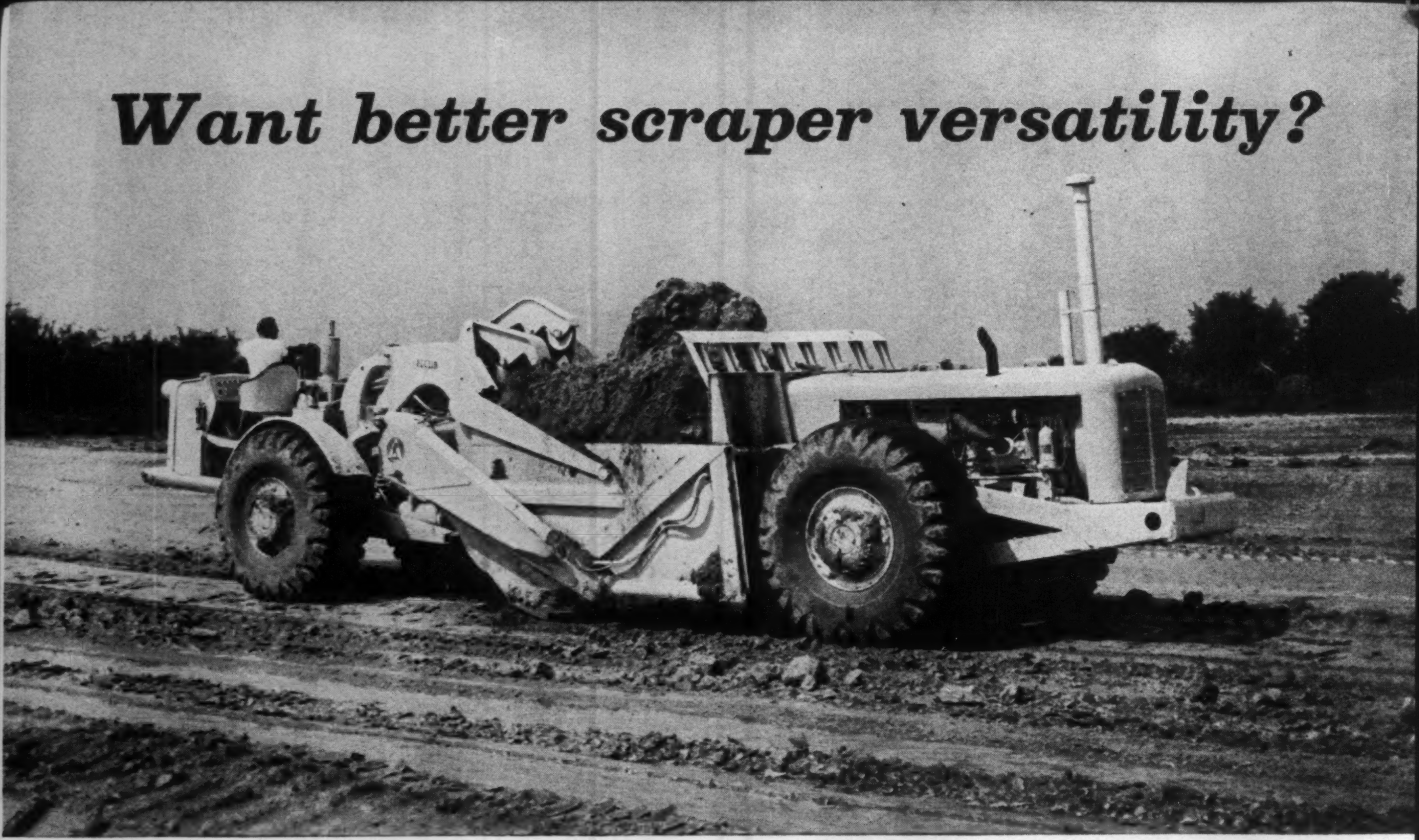

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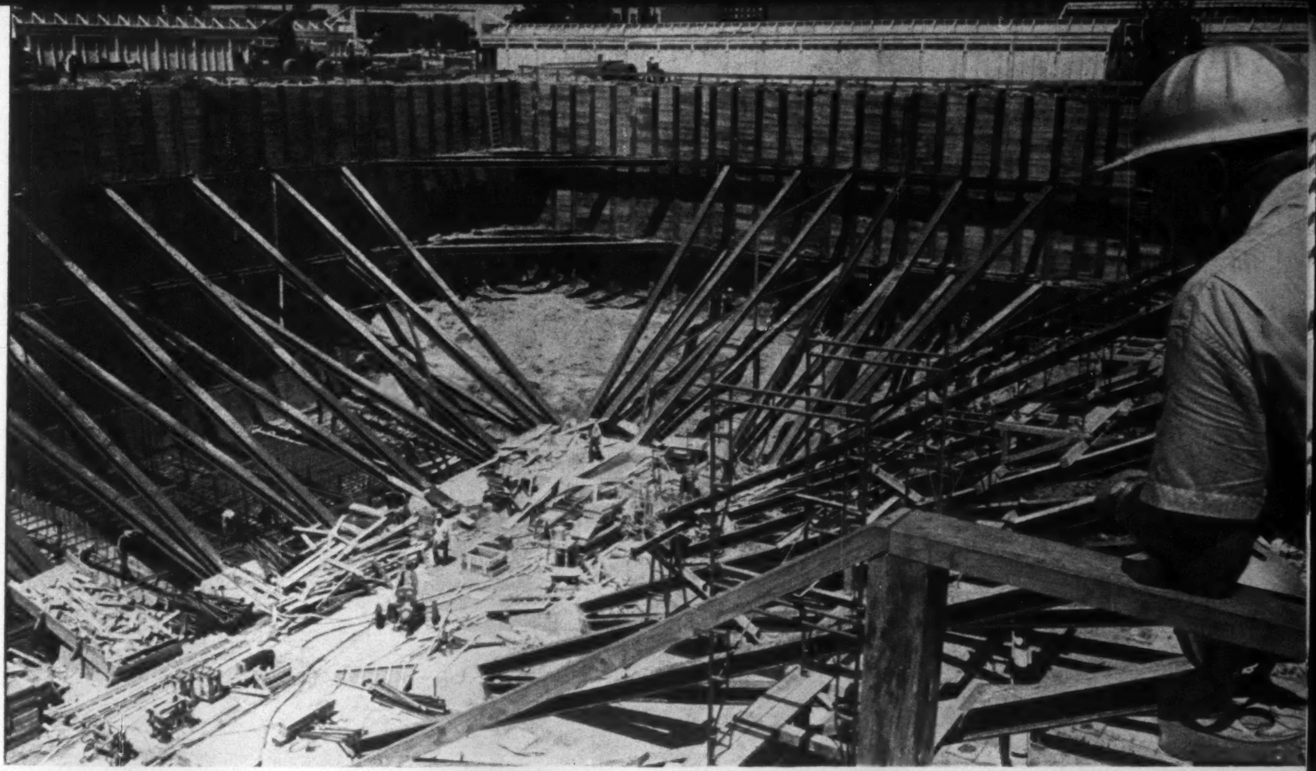


An ejector dewatering system and heavy-duty bracing permit . . .

Dry Foundation Work in 34 Ft of Water

Humble building is anything but; will be Houston's tallest.

The toughest part of constructing Houston's newest skyscraper can't be seen. It's the block-square foundation for the Humble Oil and Refining Company's 44-story office building that rises 602 ft to dominate the city's skyline.

Dewatering the site was the No. 1 problem. Bracing the big excavation ran a close second.

The excavation had to go down 54 ft, but the groundwater level was only 20 ft below street level. The builder had to deal with 34 ft of water.

The contractor installed a perimeter dewatering system completely encircling the 250x250-ft city block. It was a specially designed Moretrench ejector system, with 100 ejector wells spaced 10 ft c-c.

Operators ran this pumping system night and day for over a year to control the groundwater and hydrostatic pressure. Daily pumpage ran as high as 76,000 gal, enabling excavating crews, carpenters, ironworkers, and concrete crews to build the three-story foundation "in-the-dry".

• **Dewatering design**—In their foundation investigation, McClelland Engineers found three pervious strata of silty sand—a 20 ft stratum 35 ft below grade and 3-ft strata 60 and 75 ft below grade. The impervious strata are stiff clays.

McClelland Engineers at first considered a conventional two-stage wellpoint system to dewater the 20-ft stratum and reduce the hydrostatic pressure in the other two, according to John A. Focht, Jr., chief engineer.

But the headers and pumps of such a system would have had to be inside the excavation line. This would have interfered with other construction operations.

In the meantime, a New York contractor had successfully performed a major dewatering job for subway construction beneath Christie Street in downtown Manhattan (ENR Oct. 1, 1959, p. 34). He used an "eductor" well system, similar to the "ejector" system finally adopted for Humble's new office building in Houston.

The chief advantage of this general type of system is that it can lower the groundwater 50 ft or more in a single stage. In contrast, a single line of wellpoints can effectively lower the water level only 20 to 25 ft.

• **A winning gamble**—The initial ejector system designed by Moretrench, and installed by its contract division, American Dewatering Corp., included the injectors in sand columns spaced 10 ft c-c, as actually installed. In addition, they planned on installing sand drains midway between the ejector wells to hasten the flow of water from the 20-ft pervious stratum at elev. −25 ft to the screens at the bottom of the wells, which extended from 62 to 75 ft below grade.

But this would have cost considerable money. After thinking it over the general contractor omitted the sand drains to cut his installation costs. He took a calculated risk that the ejector wells by themselves might not be enough.

The gamble paid off. Even though he had to install a temporary wellpoint system inside the excavation to help "mine" (extract) the water out of the 20-ft pervious stratum, it cost considerably less than the sand drains would have cost.

• **Dewatering installation**—Workmen installed the ejector system to give construction equipment and crews complete freedom of access to the site at all four street corners.

Instead of encircling the entire area with one continuous system, workmen installed 25 ejector wells along each side. Two 5-hp electric pumps operated each group of 25 wells. Actually there were eight individual pumping systems of 5-hp each around the periphery of the excavation. The ejector systems operated under a pressure of 60 psi.

This method of using small pumps to pump the ejector was original on this job, says Thomas C. Gill, chief engineer of Moretrench.

DEWATERING SYSTEM (arrow) dries deep hole, using ejectors to lower groundwater.

Workmen installed the ejector wells at the curb lines on two sides of the area. Because of space limitations, they installed the other lines out in the streets.

Construction crews installed 6-in. rigid steel pipe for both the supply and return headers, and the 16-in. sanding, or well casings. They jetted and drove the casing to depths of 75 to 80 ft below ground surface, since they had to penetrate 20 ft below subgrade (bottom of excavation) to get proper relief from hydrostatic pressure. The ejectors inside in the casings varied in length.

Workmen used a "holepuncher" in jetting and driving the casing. They operated the 86½-ft long, 7-in. OD by 5-in. ID holepuncher inside the casing.

When a casing began to tighten up, and was in danger of sticking or freezing they simply withdrew until it became free, then went back into the hole with the holepuncher. They had to repeat this operation several times on most of the casings.

Radial jet streams of water from the holepuncher lubricated the sides of the holes as the casing reamed or wallowed out the hole.

When a casing was in place the workmen used the puncher to wash and swab it until the return water ran clear. Then they removed the puncher and pumped the casing free of water with an air-driven sump pump.

Workmen then set a 4-in. casing with a 3-ft long screen section on its lower end inside the 16-in. casing. Next they sumped 5 cu yd of special filter sand around the 4-in. casing and pulled the 16-in. casing.

The ejectors were installed in the 4-in. casings using flexible plastic pipe for both the 1-in. supply line and the 1¼-in. return line.

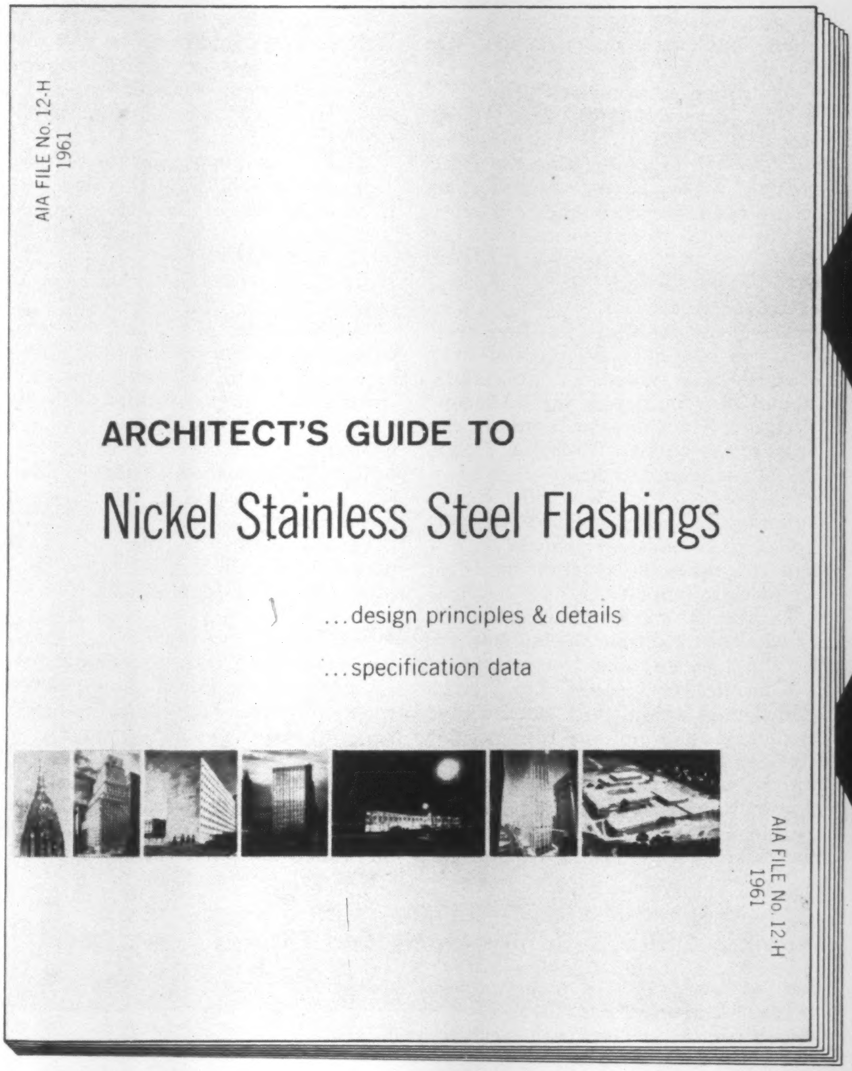
• **Operating the system**—The ejector system, which was operated by the general contractor, produced 20 to 25 in. of vacuum inside each of the 4-in. well casings.

A 500-gal supply tank served each pump. The pump forced water under pressure through the supply header down through the plastic pipe to the ejector. The water then flowed up through the return pipe, through the return header into the supply tank.

The velocity of water through the nozzle of the ejector created a suction that sucked the ground water up into the return line. Excess water not needed to keep the system working went into city storm sewers.

The entire office building sets on a 7-ft thick concrete slab that contains over 10,000 cu yd of concrete reinforced with nearly 1,250 tons of heavy reinforcing bars. Total weight of the

(Story continued p. 44)



AIA FILE No. 12-H
1961

ARCHITECT'S GUIDE TO

Nickel Stainless Steel Flashings

...design principles & details

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Design principles and details

Specification data

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a comprehensive reference manual on Nickel Stainless Steel Flashings

Now, for the first time, architects, engineers and specifications writers can get complete, up-to-date information on the design, specification, fabrication and installation of nickel stainless steel flashings. It's all here in this new 24-page booklet.

In addition to discussing flashings for both masonry and curtain wall construction, this new booklet answers questions about the properties of nickel stainless steels and why certain steels perform better than others for specific flashing jobs. It shows how to cut costs by using lighter gauges without sacrificing performance. The text is illustrated with twenty detail drawings taken from actual installations.

Yours for the asking. "Architect's Guide To Nickel Stainless Steel Flashings" will be off the presses soon. To get this valuable booklet on your reference shelf, simply drop us a postcard today.

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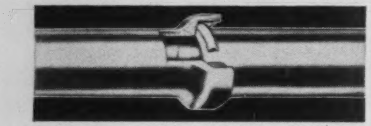

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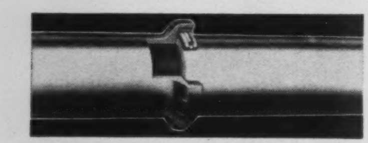

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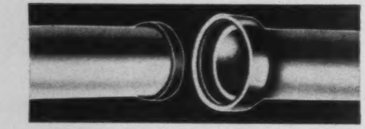

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building will be nearly 150,000 tons, when completed about mid-1962.

• **Foundation protection** – The contractor drove H-beam piles (soldier beams) at 5 ft c-c completely around a 250x160-ft area containing the office building tower, leaving room for an access ramp in one corner. Timber lagging placed by workmen against the inside face of the outer flange of the soldier beams retained the earth as excavation progressed.

The contractor braced this large open area with care and caution. Two lines of steel beam wales ran horizontally around the inside of the H-beams. Welded steel diaphragms connected the wales to the beams. At the same time the builder installed heavy steel beam struts between the wales and concrete kicker-blocks on top of the central portion of the foundation slab. Workmen removed these blocks after they had served their purpose.

Excavating crews removed 80,000 cu yd of material from the building site for the concourse and two basements.

Concrete crews placed the foundation slab on a ⅛-in. thick butyl rubber membrane for a moisture barrier. They also carried the membrane up behind the foundation walls to near ground level. It took 230,000 sq ft of this membrane to seal ground water from the building and a connecting garage.

The use of butyl rubber membrane waterproofing is another "first" for this project. Experience gained on the job, according to Humble engineers, indicates several more potential applications for it.

Steel erectors topped out the 44-story skyscraper on Jan. 27 of this year, just 11 months and 11 days after ground breaking. The steelwork includes 1,048 two-story column sections, totaling 21,000 tons. Heaviest section weighed 38 tons.

Allowance had to be made for total settlement of the office building during construction. Consequently, the architectural designs required the contractor to build the ground floor, or podium, 3½ in. above its planned elevation. Final position of the podium, after settlement, will be 3½ ft above ground level.

Humble is also building a 120-car parking garage in a block-square area diagonally across from the office building.

The garage will have six floors above ground and two basements. Two air conditioned tunnels—one for pedestrians, the other for utilities—will connect the garage and office building.

The garage foundation consists of strip footings extending to a maximum depth of 45-ft below grade. The architect-engineers designed the garage as a prestressed concrete structure.

Humble Office Building—Facts and Figures

Size: 44 stories (115x250 ft) plus semi-underground concourse and two basements.

Height: 602 ft above sidewalk level.

Project cost: $32 million (est.) exclusive level.

Net usable area: 1,053,000 sq ft.

Population: 5,000 to 7,000.

Structural frame: High strength alloy steel frame construction (bolted), with light-weight concrete floors on metal pans. Floor-to-floor height 13 ft.

Exterior wall: Columns spaced 28 ft c-c and faced with white marble. Spandrel panels are precast concrete, with exposed Dolomite aggregate. Vertical mullions are anodized aluminum spaced 4 ft 8 in. c-c between spandrel panels and glass. Fixed horizontal sunshades of aluminum and porcelain.

Fireproofing: Exterior columns encased in formed concrete. Interior columns protected by pneumatically-placed concrete.

Foundation: 7-ft thick concrete mat encased in ⅛-in. thick butyl rubber membrane, on a 4-in thick concrete seal at 54 ft below sidewalk level.

Architectural design: 4-ft 8-in. square modules, each containing its own communications and power outlets, lighting, air-conditioning, heating and sound conditioning.

Elevators: 28 high-speed passenger, 2 service and 1 freight.

Concourse: Contains 1,000 seat cafeteria, 500-seat auditorium, shops, escalator to glass-enclosed 29-ft high main lobby.

Mechanical floors: Located at 9th, 21st, 33rd floors and roof. They will contain air-conditioning, heating and electrical distribution systems and elevator machinery.

General Contractor: W. S. Bellows Construction Co, Houston, Texas, Geo. Bellows, general superintendent.

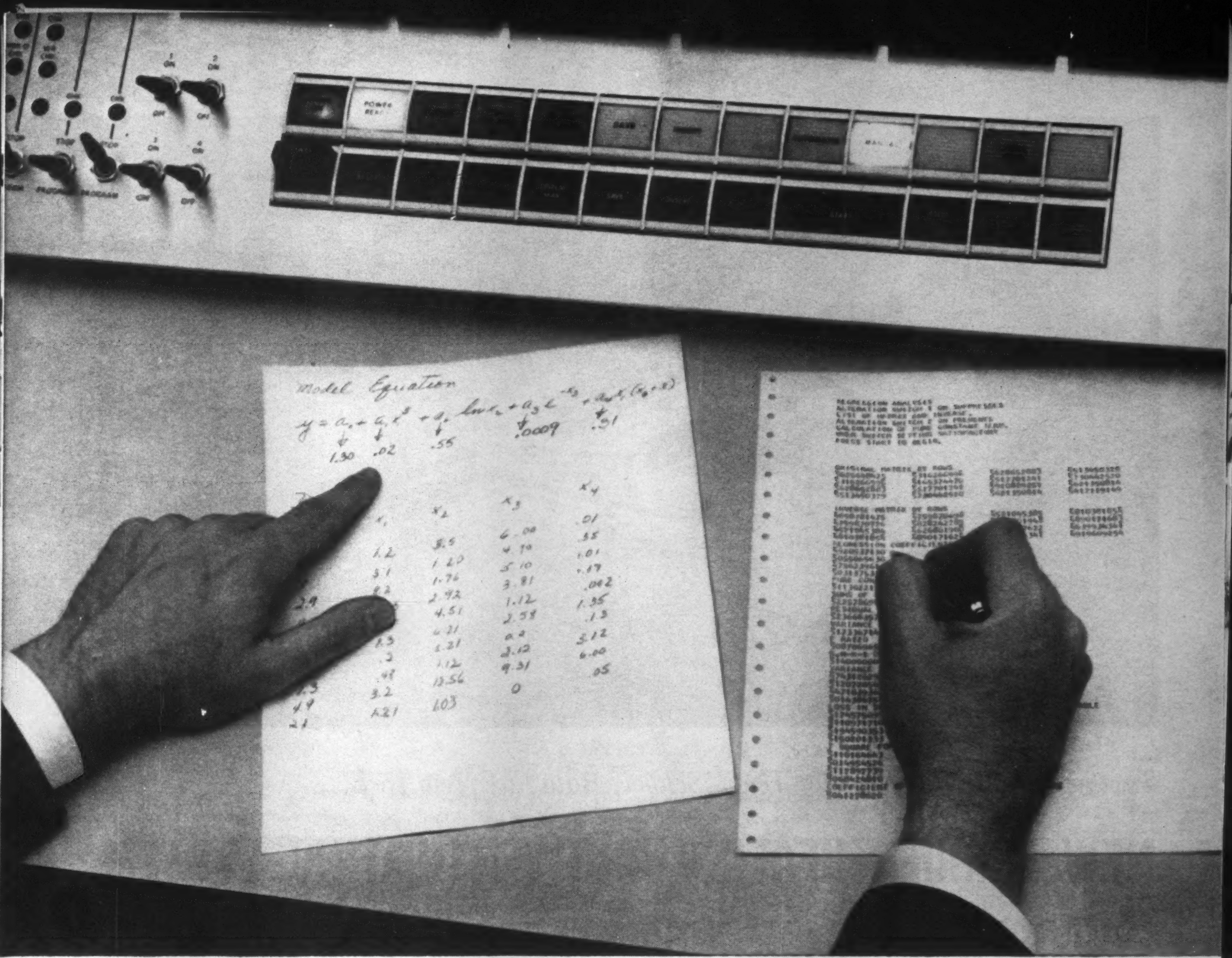
Structural Steel Erector: Peterson Bros, Houston, Tex.

Architects-Engineers: Welton Becket and Associates, Los Angeles, Calif. Charles R. Sikes, Jr., resident manager. Albert Casey, field supervisor.

Consulting Architects: Golemon & Rolfe, Houston, Texas; George Pierce and Abel B. Pierce, Houston, Tex.

Structural Engineers: Stacy & Skinner, Los Angeles, Calif.

Soils Engineers: McClelland Engineers, Inc., Houston, Tex.



Want to find the coefficients? It's easy with the new Regression Analysis program for the IBM 1620

Here's another program offered free-of-charge to users of the IBM 1620 Data Processing System. It gives you the kind of results you might expect only from a much more expensive computer. But users of the 1620 know that its low rental cost is deceptive. The 1620 packs *more computing power per cubic inch* than any other computer in its size range.

The Regression Analysis program is a good example. Suppose you want a fit for production purposes. If you employ more than two variables you probably have difficulty visualizing the representation of your data. If linearity is not the case, you must often guess blindly at a polynomial of high degree, accept or reject the fit with something approaching a sixth sense, and either try again or settle for the results you have.

The new Regression Analysis program lets you handle expressions containing up to *24 variables.* If you have the even more complicated task of handling many dependent variables, the program will generate regression coefficients with a maximum number of dependent variables not exceeding one-half the number of independent variables.

This program will also fit non-linear functions and hyper-surfaces. Compare this performance with that of any other computer in the 1620's price range.

A basic 1620 installation rents for just $1600 per month. For details, contact your local IBM Representative.

IBM's 1620 is a compact desk-size computer.

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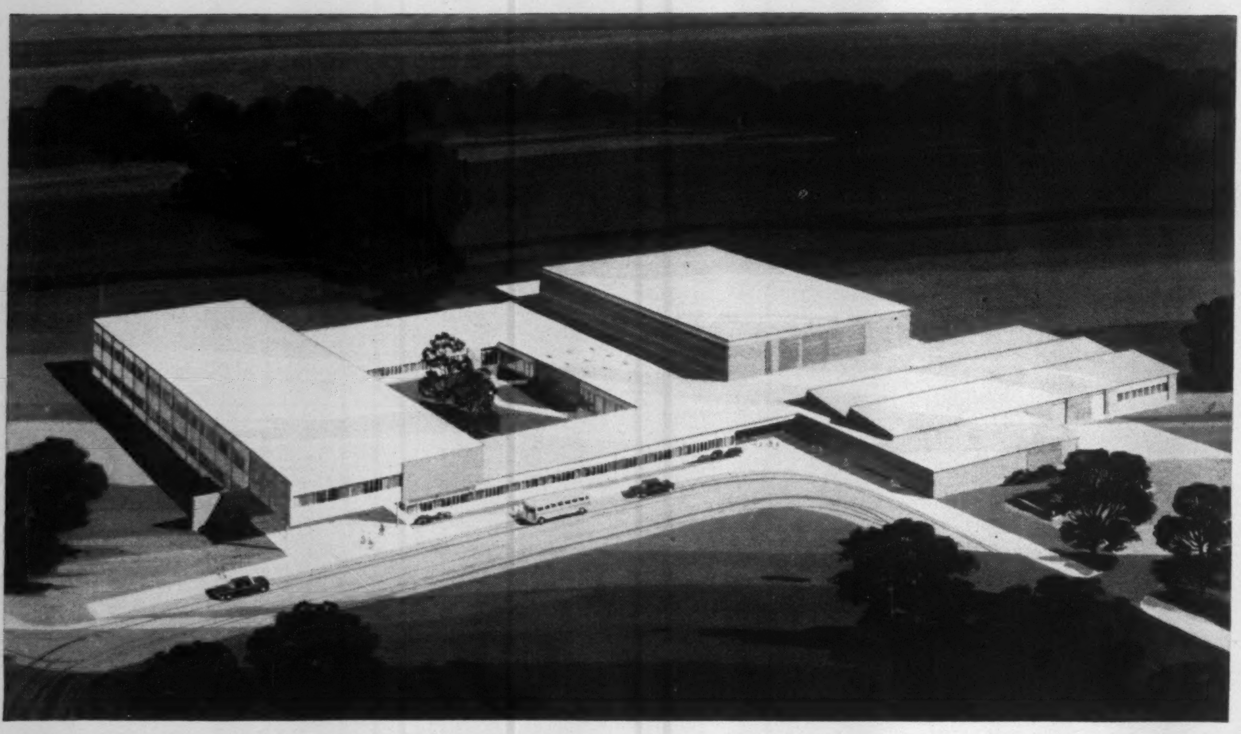


In the new Batavia Senior High School, Batavia, New York...

NEW CARRIER HEATING AND VENTILATING SYSTEM PROVIDES 8 MAJOR ADVANTAGES YET COSTS LESS

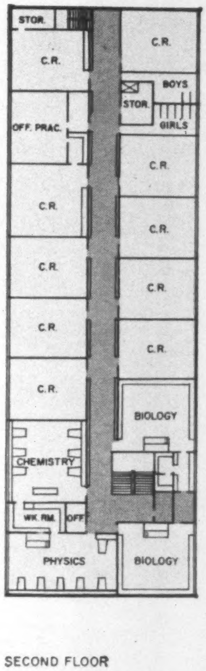
This modern high school offers an excellent example of how any new school can enjoy a superior heating and ventilating system at less than the cost of ordinary unit ventilators. And this new kind of system is ready for immediate conversion to year-round air conditioning with the simple addition of packaged refrigeration equipment in the machine room.

In planning Batavia Senior High, the designers considered unit ventilators and several popular central station systems. They carefully compared the performance characteristics, maintenance requirements, first cost and operating cost of each method. Their conclusion: The new Carrier Reheat Weathermaster* System provides the highest quality automatic heating and ventilation currently available to schools. It is the easiest to convert to complete year-round air conditioning. It costs 10% less, installed, than the next best method. And it costs less to operate and to maintain than other automatic systems.

The eight important advantages of the Reheat Weathermaster System which led to these conclusions are listed on the opposite page. They are unique because these Carrier units are the only room terminals which combine the performance benefits of the induction principle with either high or low velocity air distribution and the superiorities inherent in all central station systems.

If you are designing the mechanical plant for a new school, it should be well worth your while to look into the Carrier Reheat Weathermaster System —either for heating and ventilation only, or with an eye to future air conditioning. The nearby Carrier office will be glad to give you complete facts on the system. Or you may write to Carrier Air Conditioning Company, Syracuse 1, New York.

*Reg. U.S. Pat. Off.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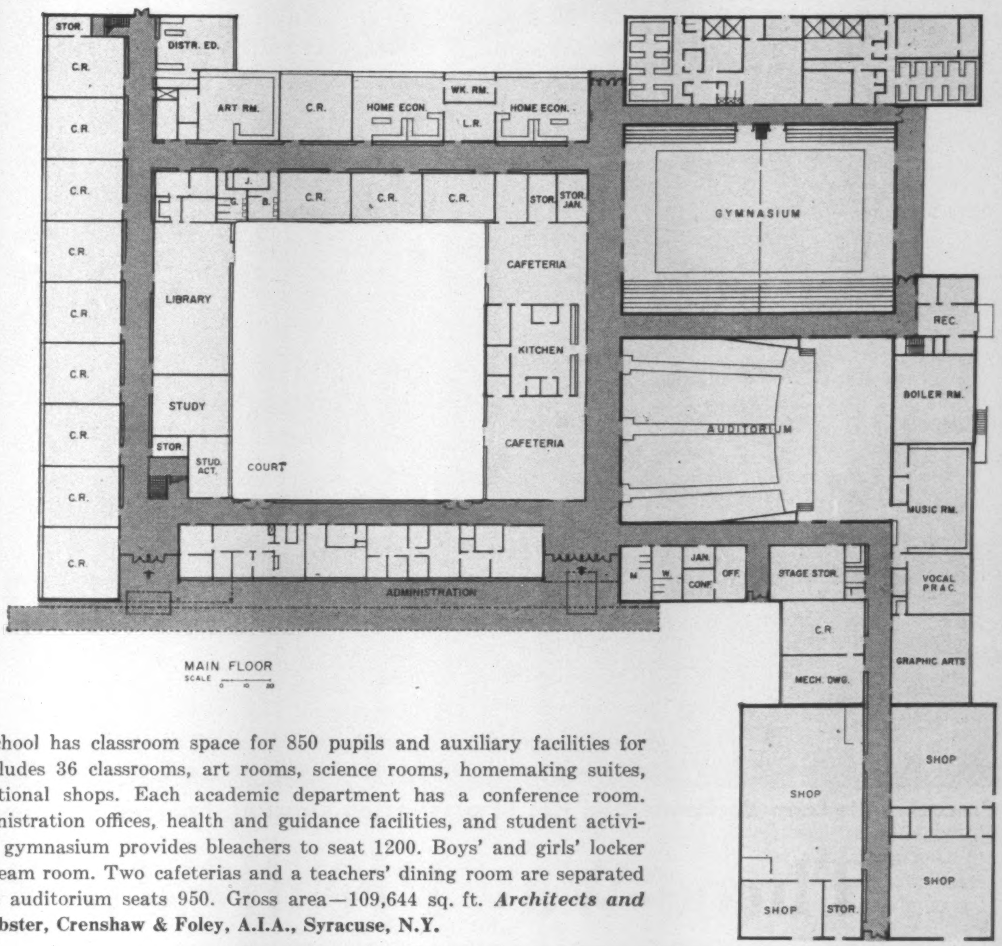
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STAGE STOR.
MECH. DWG.
GRAPHIC ARTS
SHOP
MAIN FLOOR
SCALE 0 10 20

Batavia Senior High School has classroom space for 850 pupils and auxiliary facilities for over 1000. Building includes 36 classrooms, art rooms, science rooms, homemaking suites, music rooms and vocational shops. Each academic department has a conference room. Also provided are administration offices, health and guidance facilities, and student activities center. Two-station gymnasium provides bleachers to seat 1200. Boys' and girls' locker facilities also include a team room. Two cafeterias and a teachers' dining room are separated by a large kitchen. The auditorium seats 950. Gross area—109,644 sq. ft. ***Architects and Engineers:*** **Sargent, Webster, Crenshaw & Foley, A.I.A., Syracuse, N.Y.**

Only the Carrier Reheat Weathermaster System offers these 8 advantages for heating and ventilating

1 Positive ventilation and air circulation under all conditions and seasons for improved odor dilution. Constant air volume from units.

2 Quieter operation—no fans or other moving equipment in classrooms, with all powered equipment located in machine room for easy servicing.

3 Superior air filtering at central station—minimum filter maintenance.

4 No costly wall openings, subject to rain and wind leakage, required in classrooms for ventilation air.

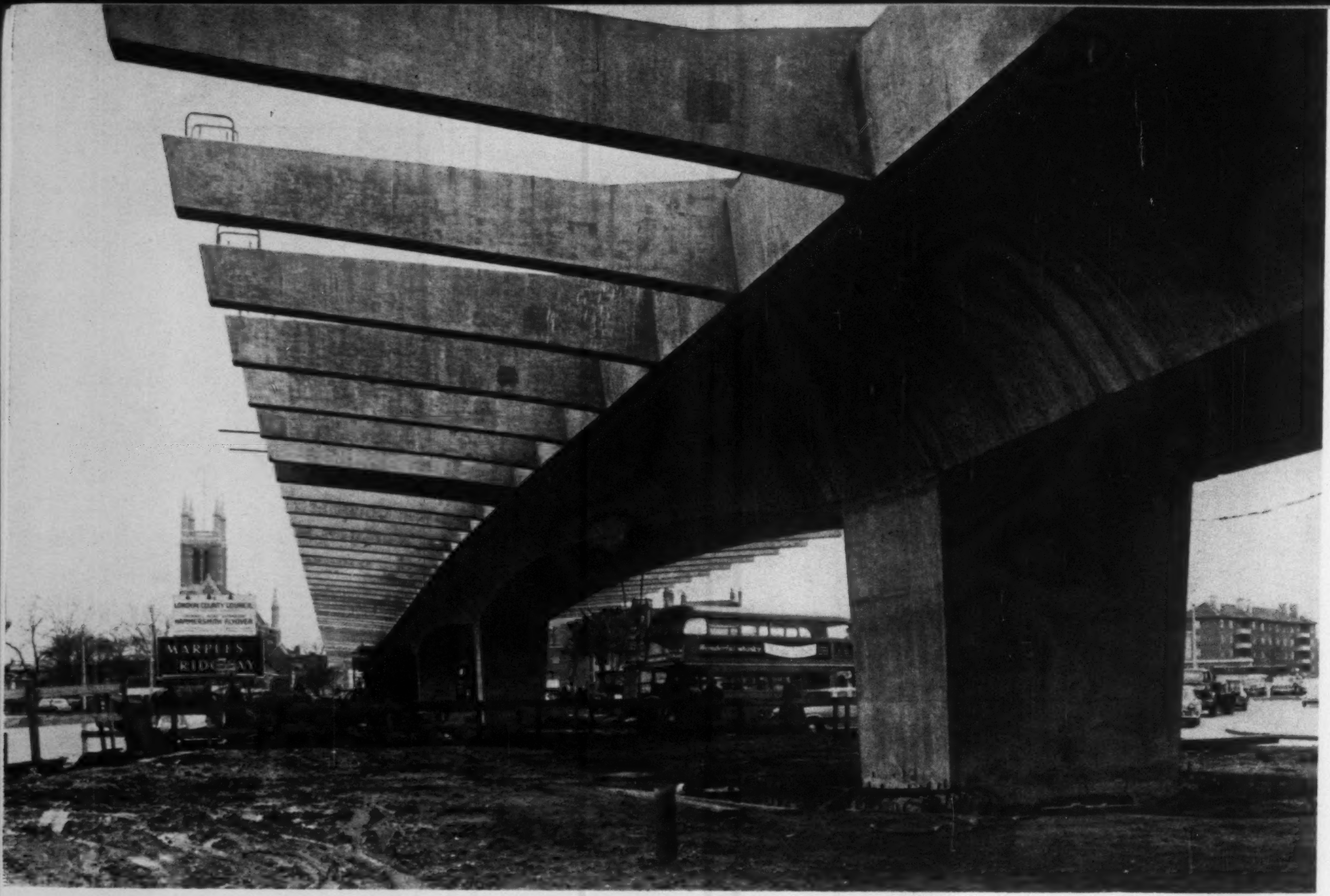
5 No operation of fans required for night and week-end heating, with gravity heating handling the load.

6 Individual temperature control in every room solves zoning problems; air damper assures easy initial system balancing, requires no adjustments thereafter.

7 Valuable classroom floor and wall space is saved by the compact units; cabinet only eight inches deep.

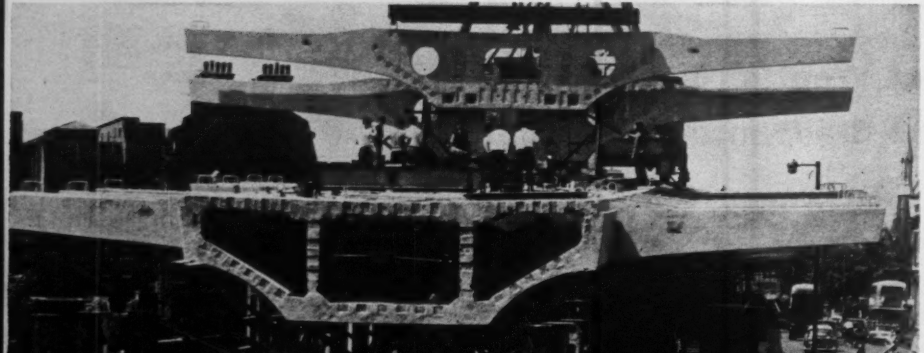
8 Easily and economically converts to full-year-round air conditioning at any future date with simple addition of packaged water chilling machine in central apparatus room. No revision of classroom units, controls or air ducts required. Condensate drains not needed. Nominal conversion cost about 65c per sq. ft., or less.

Carrier ***Air Conditioning Company***



Precast units form backbone and ribs of prestressed structure founded on tapered piers.

Three-Way Prestressing Builds



CANTILEVER SECTIONS fit between beam units, carry outer lanes and edge beams.

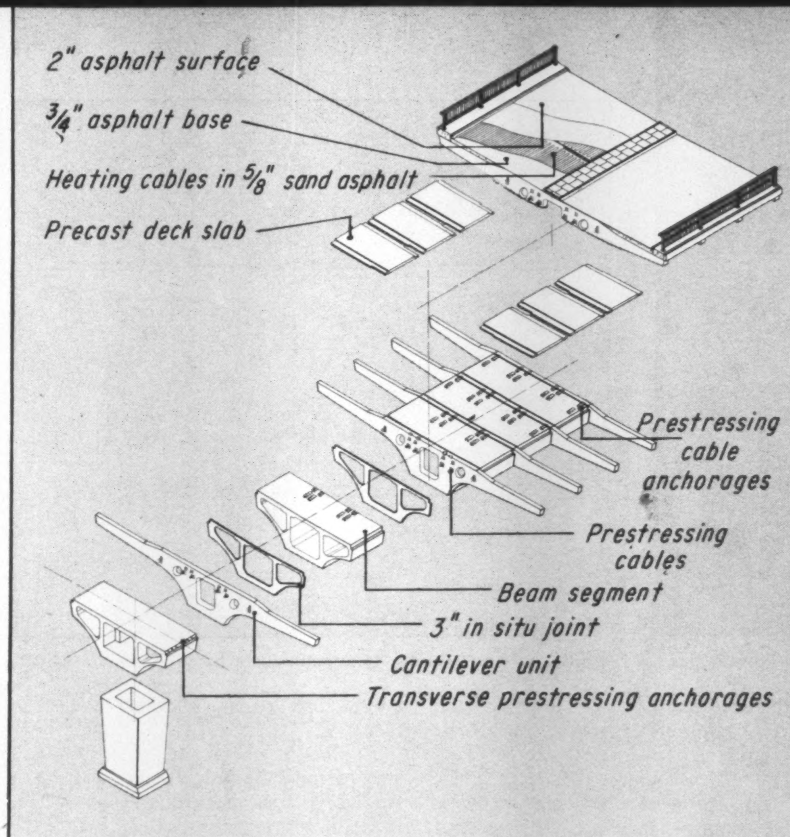
Engineers engaged in modernizing one of London's major traffic arteries faced a problem: Build a half-mile long viaduct in an exteremely congested and cramped area to cross six roads and a busy railway. Traffic had to be maintained during construction. And the design could not clash with some of the city's most historic buildings nor with modernistic office buildings near the route.

Solution is the Hammersmith Flyover, says the London County Council and consulting engineers G. Maunsell & Partners, London. The viaduct has slim and elegant lines, is supported by 15 narrow, tapering columns. It will be completed this fall.

The structure incorporates longitudinal, transverse and vertical prestressing. The columns rest on roller bearings. And the roadway has an electrical heating system.

• **Superstructure**—There are 16 spans in the viaduct: 11 at 140 ft; 2 at 120 ft; 2 at 94 ft 6 in.; and 1 at 74 ft. Embankment approaches total nearly 800 ft.

A single expansion joint divides the concrete structure into two parts 811 ft 6 in. and 1,232 ft 6 in. long. Each



Exploded view shows assembly details of Hammersmith Flyover.

a London Viaduct

part-structure is continuously prestressed, anchored to the abutment on that side.

Main structural element is a three-compartment hollow box girder 26 ft wide that tapers gently from 6 ft 6 in. deep at mid-span to 9 ft deep at the columns.

The box girder is made up of precast beam segments, 8 ft 6 in. long, that alternate with 1-ft-thick precast cantilever sections. The sections are joined by 3 in. of cast-in-place concrete.

Longitudinal prestressing cables tie the precast and cast-in-place sections together like beads on a string.

Precast concrete slabs comprise the deck of the structure. The deck slabs are made continuous by overlapping projecting reinforcing and casting concrete in place.

The reinforced concrete cantilever sections act as diaphragms for the hollow box girder. They also support the outer deck slab units.

Continuous, cast-in-place edge beams complete the load-carrying structure and form narrow sidewalks for maintenance and emergency use. The edge beam behaves as a beam with elastic supports, distributing part of any excessive local loading on one cantilever unit to the adjacent units.

- **Precast units**—The contractor, Marples, Ridgway and Partners, producers all precast units—beam segments, cantilever units, deck slabs and wall copings—at a casting yard nine miles from the construction site.

The beam segments and cantilever units are cast on their sides (on a face that is vertical when erected and in contact with a joint). The contractor uses adjustable steel forms.

The forms are designed to maintain the curved shape of the underside of each beam segment constant throughout the length of the structure. Both the girder depth and width of soffit vary from minimum section at mid-span to maximum at the columns. Segment weight varies from about 40 to more than 60 tons.

The central compartment will carry utilities—a water main, drains and electric cables for roadway heating and lighting. Top surfaces of the beam segments form the inner portions of the deck slab and a 5-ft median where light standards and access manholes are located.

Cantilever units, shaped like inverted coathangers, are 12-in. thick, 59 ft long and weigh about 17 tons each. They vary in depth to match the neighboring beam segments. Tapered arms repeat along the entire elevated structure. Each cantilever is heavily reinforced.

Precast deck slabs are reinforced con-

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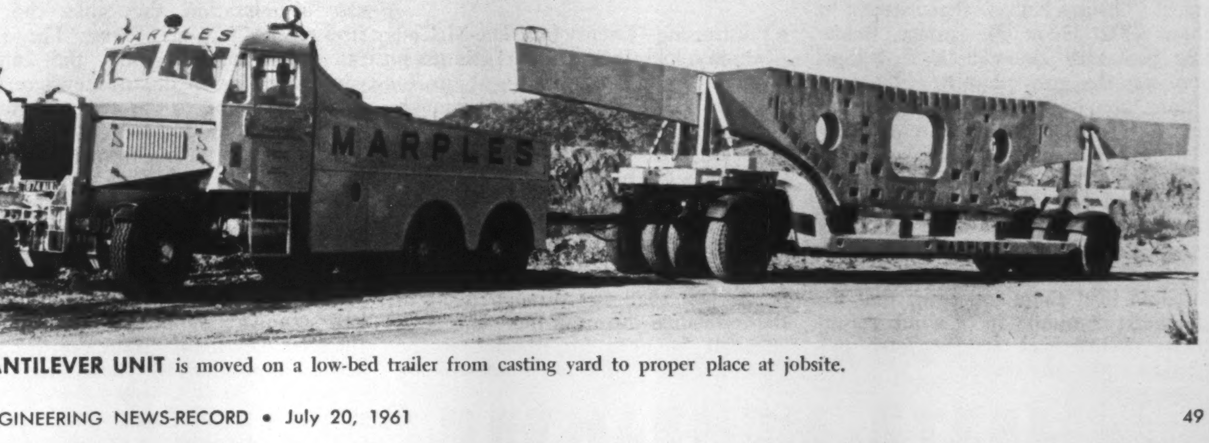
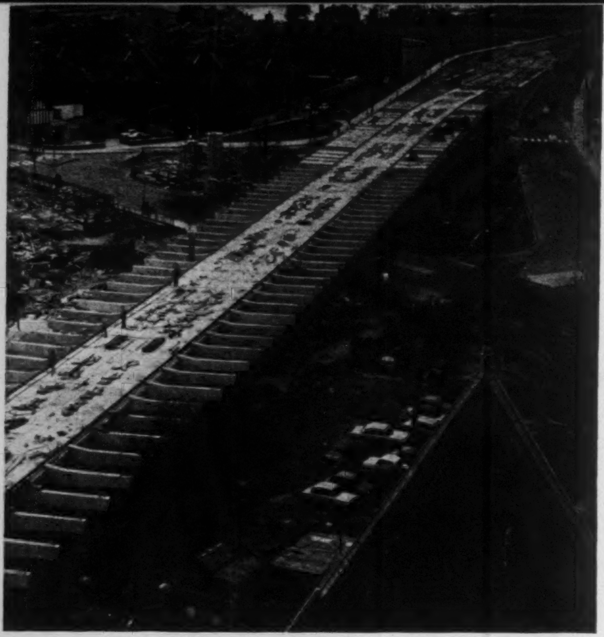
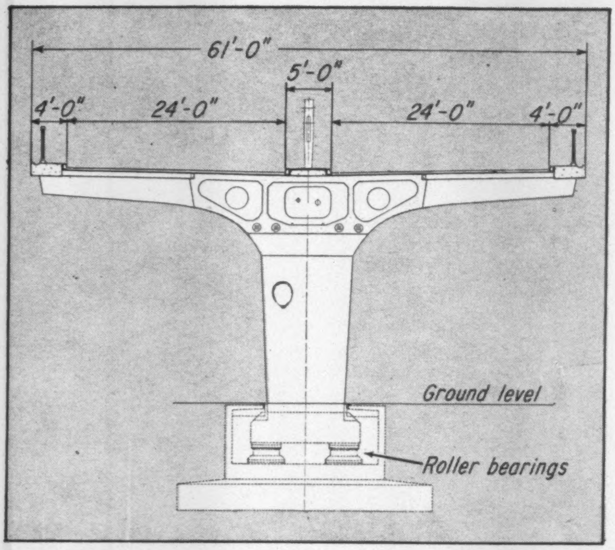


CANTILEVER UNIT is moved on a low-bed trailer from casting yard to proper place at jobsite.



LONG VIADUCT will relieve traffic congestion in crowded area.



PIERS rest on bearings to accommodate longitudinal movement.

crete, 14 ft 4 in. long, 9 ft 6 in. wide and 8 in. thick; each weighs 6½ tons.

• **Piers and foundations**—Cast-in-place tapered concrete piers and cellular-type abutments support the superstructure. Vertical prestressed bars tie the girder to each pier. The base of each pier rests on roller bearings to accommodate longitudinal movement caused by temperature change, creep or shrinkage of the concrete.

Piers are hollow and rectangular in cross section, varying from 10 x 8½ ft at the top to 8½ x 7 ft at the bottom. Walls are 2 ft thick. Average height is 16 ft.

Each pair of bearings straddles the center line of the overpass at 8-ft, 6-in. centers to resist overturning moments from wind and eccentric live loads.

Bearings are about 8 in. in diameter and 2 ft 8 in. long They are designed to take a direct load of more than 1,000 tons. Fritz Kreutz of Dusseldorf, Germany, designed the bearings, which have been used widely for bridges in Western Germany.

Spread footings that support the columns rest on a deposit of sand and gravel (Thames ballast) that extends to about 27 ft below the surface. Below that is heavily over-consolidated London clay to great depths. Soil conditions are uniform at the site and engineers expect little differential settlement. If necessary, columns can be jacked and packing beneath the bearings added or removed to correct settlement.

Allowable foundation pressure used in design is slightly over 2 tons per sq ft for dead load alone and twice that for the worst combination of wind, eccentricity of live load, tractive force and friction under any corner.

• **Erection**—The contractor moves the precast beam and cantilever units from the casting yard to the job site on lowboy trailers. Lifting hooks are cast into the units and burned off after erection.

The contractor erects the precast units with a steel gantry driven by an electric motor along rails placed on 24-ft centers. The gantry picks up a beam unit at the bottom of an approach ramp, carries it up the ramp and over the units previously erected. The operator then lowers the unit into place, backs up to get a cantilever unit and repeats the process. Workmen then extend the gantry rails and continue the process.

Falsework supports the units directly beneath the gantry rails (under the beam segments). Each bearing pad is 3 ft 9 in. long and straddles a cantilever unit, supporting it and the corner of the beam segment on either side. Provision is made for jacking for final adjustment for level and for striking the pads after stressing.

The contractor interrupts the sequence of erection in any span only for casting the joints and the subsequent stressing operation.

• **Prestressing**—Twenty-four Lee-McCall 1¼-in.-dia high-strength bars tie each beam segment that rests on a pier to the pier. The bars pass down through ducts placed in the pier walls to anchorages cast in the pier base. The contractor stresses the bars from the top.

The stress is great enough to allow the piers to resist both longitudinal and lateral bending. These particular beam segments also are stressed transversely by six bars that pass through ducts in the top flange. Stress in these bars gives adequate strength for transfer of the shear, carried by the outer webs of the hollow box girder, transversely to the pier.

Engineers chose the Gifford-Udall system for longitudinal prestressing of the box girders. Stranded cables, 1⅛ in. in diameter, are arranged in four clusters of 16 each, one cluster on either side of each inner web of the girder. At midspan, where the cables are at maximum eccentricity to the box girder neutral axis, each cluster passes through a 10-in.-dia duct located in the bottom flange.

To avoid massive anchor blocks and an excessive concentration of anchorages and to make construction simpler, designers overlapped the cables longitudinally. Each group of cables passes through two successive spans. Groups are anchored at both ends in the top flanges of beam segments on the far side of each pier for the particular span involved. Anchorages are located in the top flange of the girder. Eight supplementary prestressing cables pass through ducts located in the outer webs for a short distance on either side of a pier.

Workmen jack the cables from both ends at the same time, applying half the ultimate stress in one operation. In case of relaxation, the cables can be stressed again in six weeks. The contractor eventually grouts the cables where they are in ducts; elsewhere the cables are bound to the webs by a mortar casing. The designers provided anchor blocks at each abutment and on either side of the structure's single expansion joint.

The structure is fully continuous under dead and live loads. Stressing, however, induces in the indeterminate structure vertical reactions at the columns and secondary moments. At midspan, the secondary moments are positive and act in opposition to the desired pre-

Re-used Bethlehem steel sheet piling being driven at the new dock extension of Wilmington's Marine Terminal.

After 28 years' exposure to brackish water . . . this Bethlehem Steel Sheet Piling was USED AGAIN

Owners: Board of Harbor Commissioners, Wilmington, Del. Engineers: Modjeski & Masters; Contractor: Newark Construction Company. (Piling driven in 1933 by Thos. Earle & Son, Inc., Philadelphia.)

In building an extension of a dock in the Wilmington, Del., Marine Terminal, the contractor pulled out 25,550 lineal feet of Bethlehem steel sheet piling. Driven in 1933, it was presumed to be ready for replacement. But after thorough examination, the piling was found to be in such excellent condition that it was decided to re-use all of it in building the new dock curtain wall. After 28 years' exposure to brackish water, the Bethlehem steel piling had lost little or none of its strength due to corrosion.

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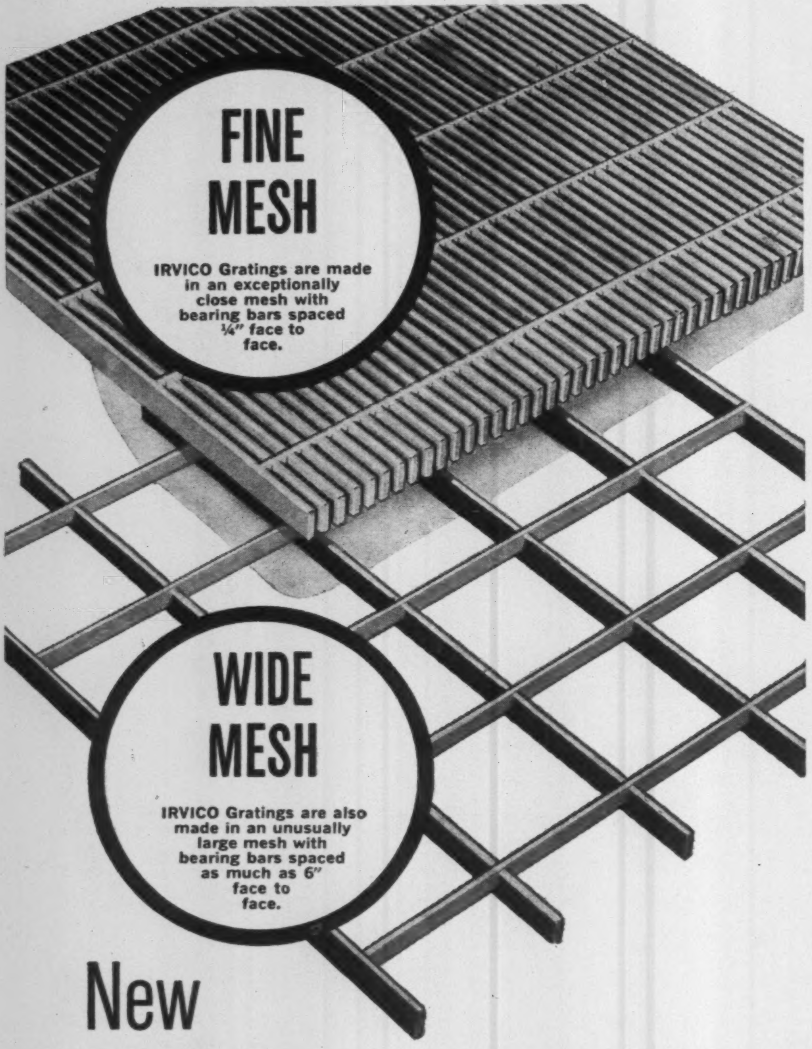
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stressing moments. To overcome this, the contractor builds each span to a slightly warped profile and then jacks it straight to lock in a small permanent moment in the opposite direction. No extra construction operation is necessary, since each pier is jacked to correct for any settlements that occur immediately under the dead load.

• **Expansion joint**—Concrete cast in place on the precast anchor blocks forming the ends of the free cantilevers supports the single expansion joint. The roadway joint is a conventional comb-block with interlocking fingers of spheroidal graphite cast iron; median strip and edge beams have sliding stainless steel plates.

The joint allows for a total movement of 14 in.—2¾ in. residual creep and shrinkage (after setting of the joint) and ±5½ in. either side of the mean for temperature and moisture changes.

Maximum movement of a roller bearing is 2.1 in. either way, but the design includes an allowance for 2.5 in. for any inaccuracy in setting or in estimating creep and shrinkage.

• **Road heating**—To prevent icing, cables embedded in the wearing surface can heat electrically the entire overpass roadway. In order for heating to occur, three conditions must exist: an off-peak traffic period; temperature below 37°F; and rain falling or dry snow lying on the surface.

A time switch, thermostat and surface wetness indicator control the heating switch. The surface wetness indicator has two brass plates set 6 in. apart in the surface. When the surface is wet, resistance between the plates alters. An intermittently heated plate in the indicator turns snow into moisture, with corresponding resistance change.

• **Model tests**—Engineers based design of the overpass on an elastic analysis under allowable stresses. They also studied its margin of strength and likely behavior under ultimate loads.

The British Cement and Concrete Association carried out model tests on the structure to increase knowledge about ultimate behavior of prestressed concrete members under bending, shear and torque. First tests of the model used load factors of 1.5 for the dead load, 2.5 for live load on the two lanes of one roadway and 1.0 for the live load on the other two lanes. Despite extensive cracking, the model supported these loads.

Investigators then loaded the model to failure under severe torque, given by load factors of 1.5 to the dead load, 2.5 to the live load on one roadway and no loading on the other roadway. The model failed as this load was reached.

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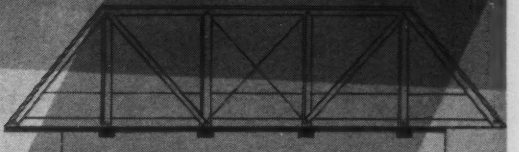

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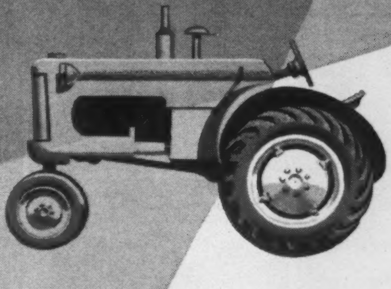

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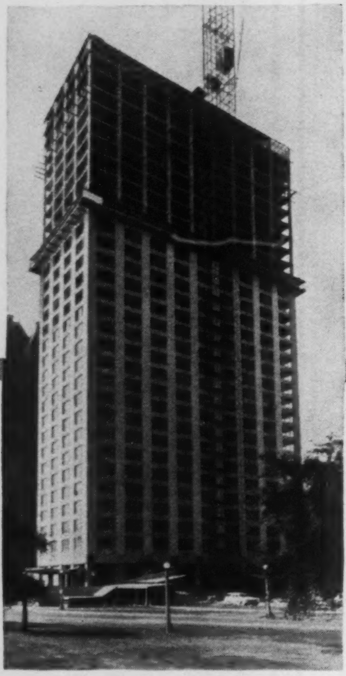

1550 Lake Shore Drive Apartments, Chicago, Illinois
Architects and Engineers: Shaw, Metz & Dolio, Chicago
General Contractors: Crane Construction Company, Inc., Chicago

The top thirty stories of the 1550 Lake Shore Drive building were placed at the rate of one story every three days during a regular five-day week. This new thirty-five story building is the second tallest monolithic reinforced concrete frame building in the United States.

Staying on schedule is no problem when you build with reinforced concrete. The simplicity of monolithic construction—with floors and frame placed simultaneously—permits other trades to follow closely behind and finish their work on schedule, assuring early completion and occupancy.

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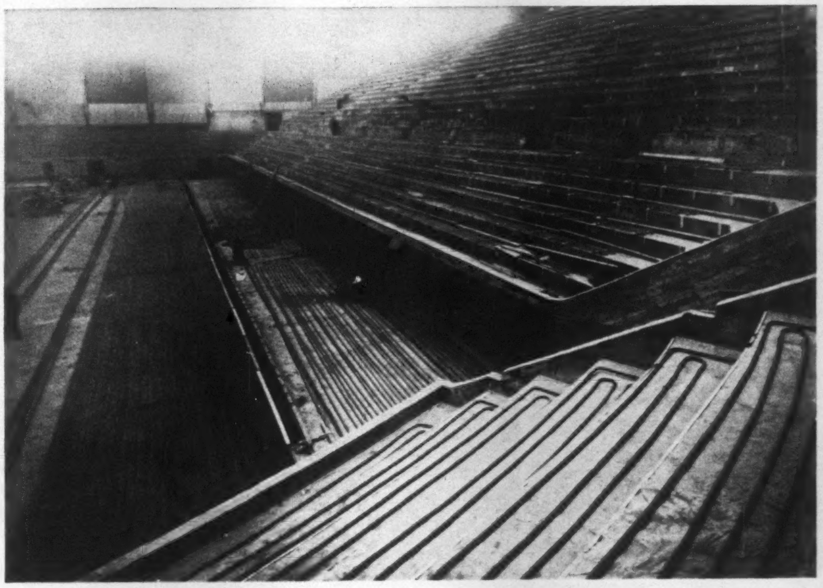
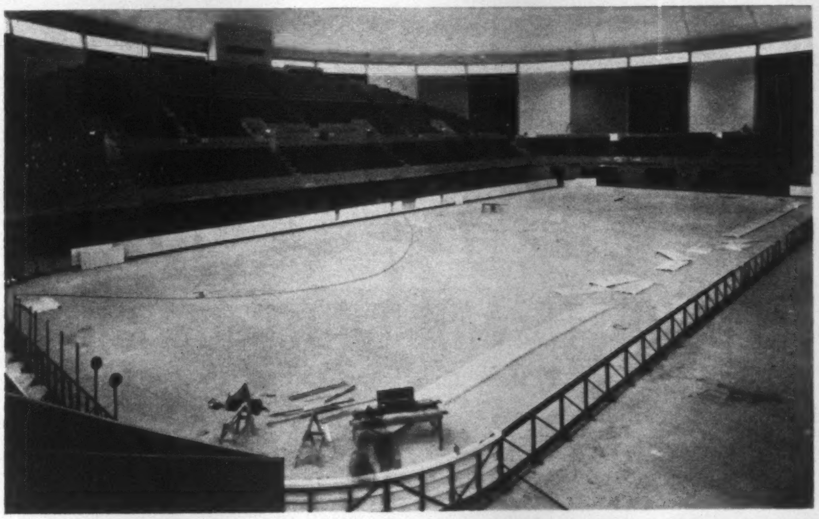


Heating and refrigeration pipes cover arena floors and . . .



. . . Concrete topping finishes skating area and benches of . . .

Ice Rink Wrapped in Warmth

Amateur hockey teams in Montreal, Canada, will soon slide the puck across brine-refrigerated ice, while warm-footed spectators cheer. The warm feet will come from radiant-heated stands of the Maurice Richard Skating Rink.

The heating system for the new sports center is divided into two distribution zones, each having its own converter and control. A heat exchanger, which provides 2.5 million Btu an hour, uses 2,700 lb of steam each hour to heat circulating water to 110 F.

Concrete-covered pipes distribute heated water throughout 60 rows of seats and to the walking areas alongside the ice ring. Fabricated into sinuous coils, the 1-in.-dia wrought iron pipe is encased in 2 in. of concrete.

Rink piping is also wrought iron, 1¼ in. in diameter, set 4 in. c-c. Brine solution, stored underneath the 85x 190-ft skating area, will be chilled by compressors with a capacity of 150 tons of refrigeration.

The 5,000-seat arena was designed by Julien Perrault so that no columns would obstruct the spectators' view. LeBlanc and Montpetit designed the heating and refrigeration system. Charles Dancereau was the general contractor. All are of Montreal.

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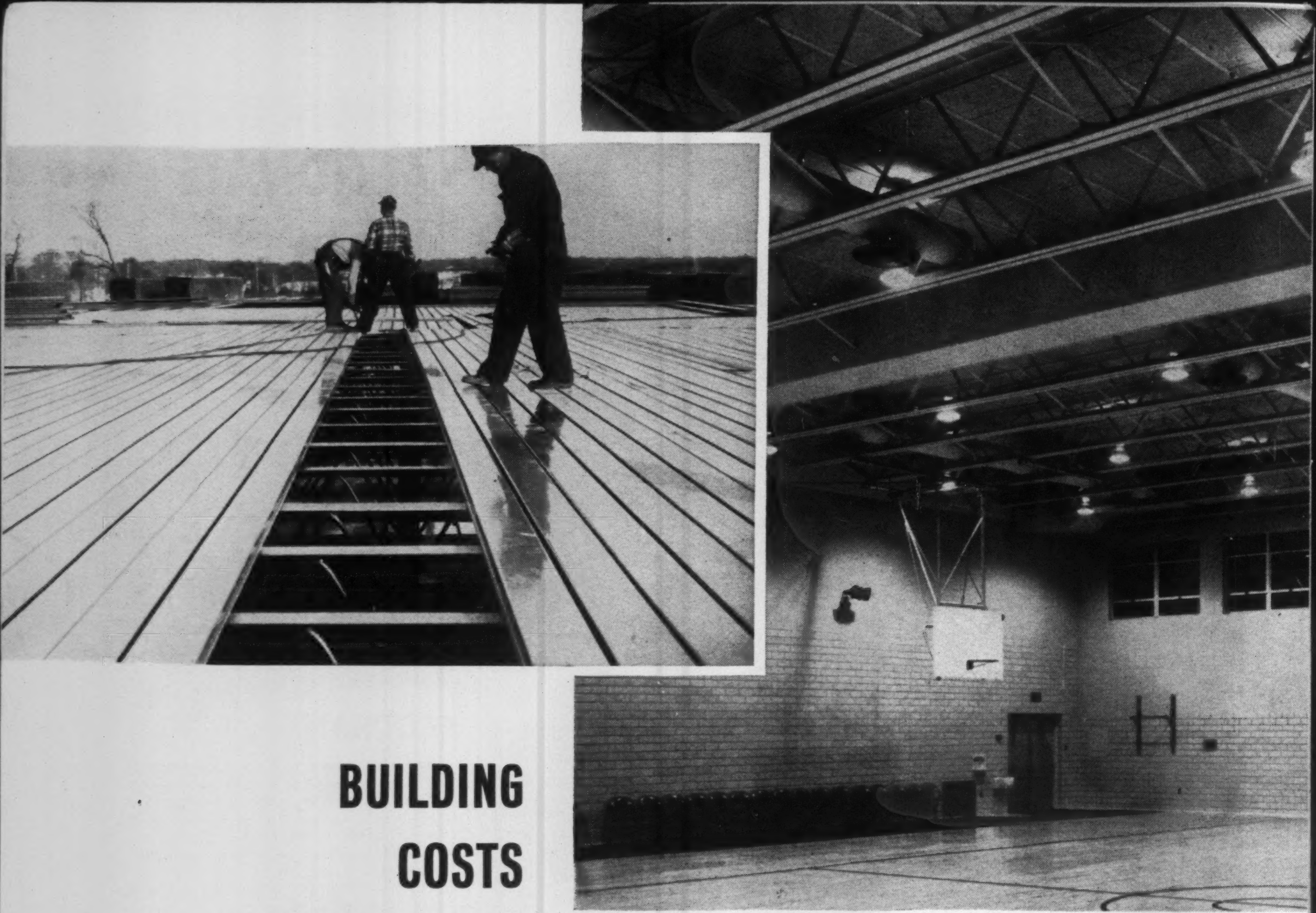

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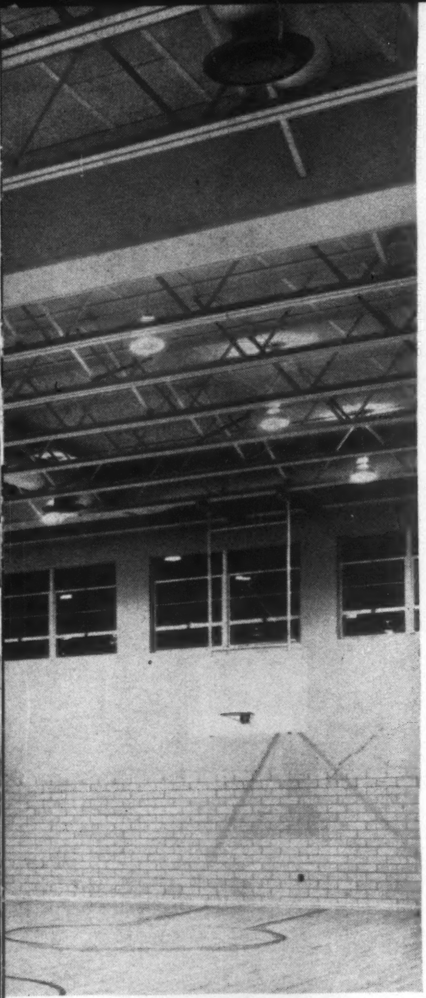

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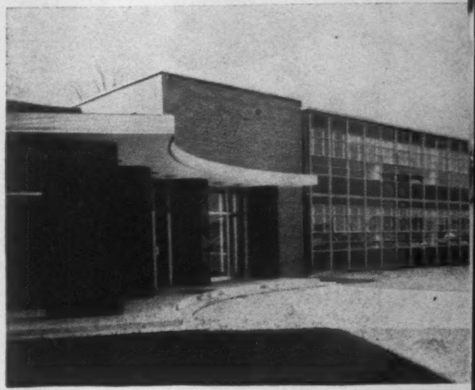

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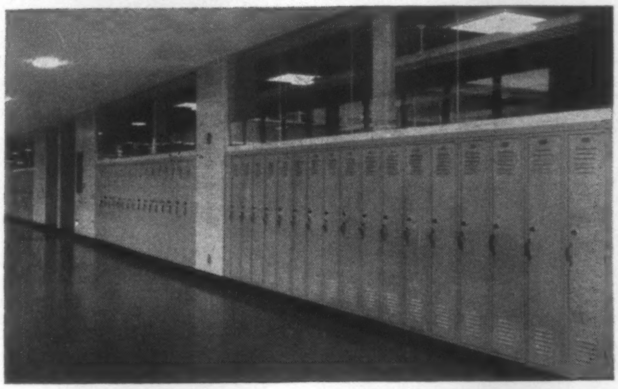

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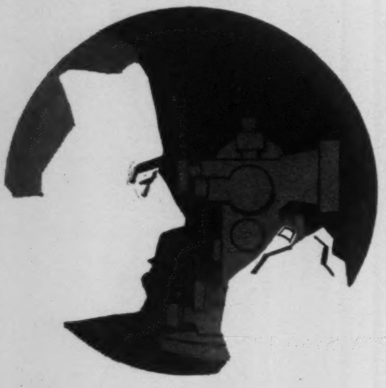

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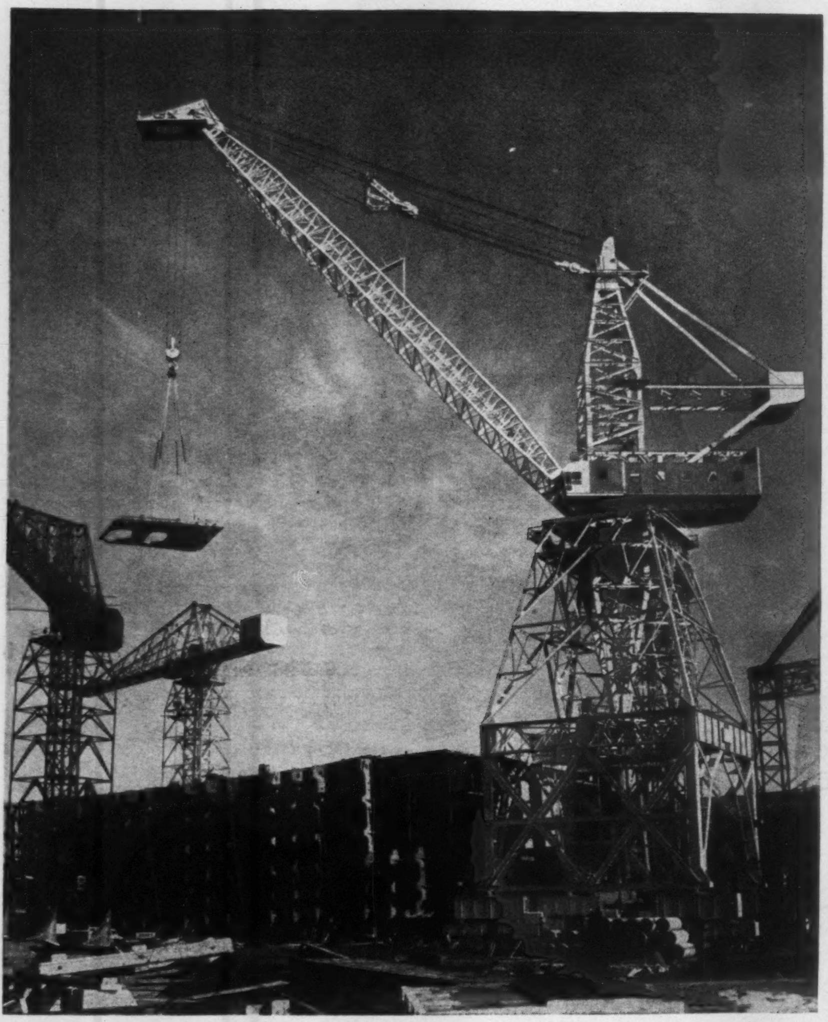

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This machine, reputed to be the largest traveling monotower ever built, has a lifting capacity of 100 tons at a 122-ft radius, 40 tons at a 160-ft radius. For up to 40 tons, its lifting speed is 25 fpm, for over 40 tons it's 10 fpm. And the rig, which itself weighs more than 890 tons, can lift its loads to just short of 300 ft high when its boom is at its minimum 52-ft radius.

Eight electric motors, ranging from 32.5 to 115 bhp, provide power for all operations including travel. The machine travels on 32 wheels—16 drivers and 16 idlers. Bogie and sill girder construction of the undercarriage compensates for even the slightest irregularity in the tracks and guarantees that the 214-ft-high revolving mast will remain vertical at all times.

For all critical machine or load movements there are dual braking systems that work in opposition to each other to insure safety. For example, on the main hoist there is an electro-mechanical brake on the motor extension shaft and a disc brake on the main drum pinion shaft. The mechanical brake is normally in an "off" position and is applied by the operator to control the raising or lowering of a load. The disc brake is a spring-loaded unit that is normally in a "hold" position unless it is released by the operator through an air-flow regulator valve. In the case of any failure, mechanical or human, this brake will automatically secure the load.

The operator's compartment stands 126 ft in the air. It's connected by telephone to ground control units.

The crane, which was built by Butters Brothers & Co., Ltd. of Glasgow, Scotland, is the first of two ordered for use in an English shipyard.

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Lloyd Kispert & Son recently laid 3611 feet of 12-inch K&M Asbestos-Cement Sewer Pipe within a few hundred feet of Green Bay. The water table was so high that the pipe was laid under water. Nevertheless, all joints had to be infiltration-tight. On the next page, Mr. Kispert, in his own words, tells how he solved this problem.

You can dig flatter grades for K&M Asbestos-Cement Sewer Pipe because its bore remains smooth and clean.

Water, snow, mud, and rain can't hold up the installation of K&M Asbestos-Cement Sewer Pipe.

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Mr. Lloyd Kispert

You could lay K&M Asbestos-Cement Sewer Pipe at the bottom of a 58′ deep lake, and it would be infiltration-tight.

The smooth bore of this modern pipe remains clean, permanently. The friction coefficient is low. You can plan fewer lift stations and flatter grades.

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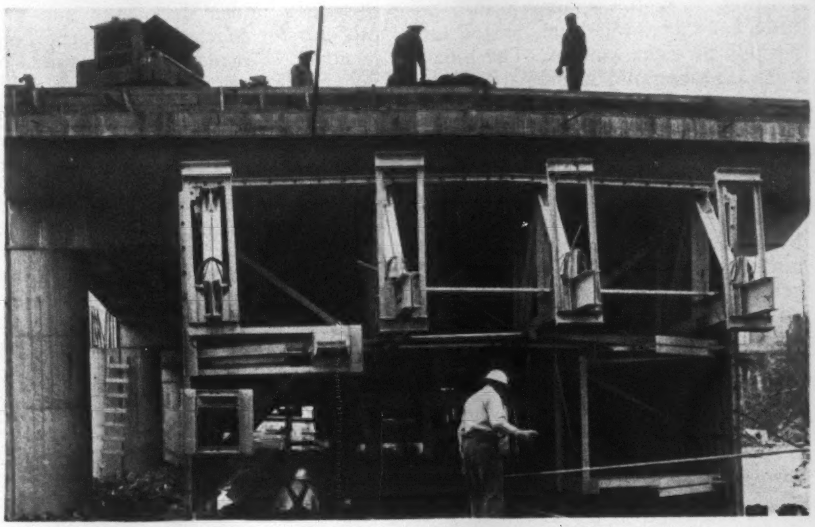
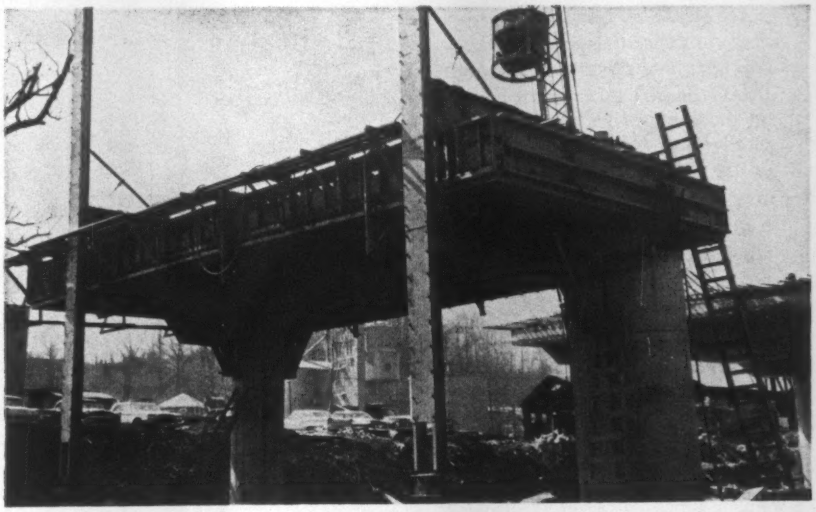


Steel Forms Fold and Roll . . .



. . . for Concrete Bridge in Swamp

Case Construction Corporation, Mt. Airy, Md., is building two of the longest reinforced concrete flat slab bridges in the country as a part of an overpass of Baltimore's Jones Falls Expressway.

One of the twin bridges is 1,243 ft long; the other, 1,200 ft. Each span is about 42 ft.

A 27-in.-thick, cast-in-place deck slab rests on cast-in-place pier caps. Each cap is supported by twin circular piers. The contractor uses heavy steel forms without shoring to cast the pier caps and the deck slab.

One reason for use of the steel deck forms is the swampy location of this section of the four-lane, $70-million expressway, which is part of Interstate 83. The poor soils offer little support for falsework.

Case workmen began the project by draining ditches, moving sewage pipes, and then filling, leveling and laying "railroad" track. The re-usable steel forms—fabricated by the Blaw-Knox Co. of Pittsburgh—arrived at the job site in sections.

Assembled, each bridge deck form measures 44 ft 3 in. wide and 42 ft long. The middle sections adjust to meet camber and crown requirements. Hinged 10-ft-wide outer sections fold down to permit shifting of the 62-ton

(Please turn the page)

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unit on a special flat car towed by a crane-operated winch.

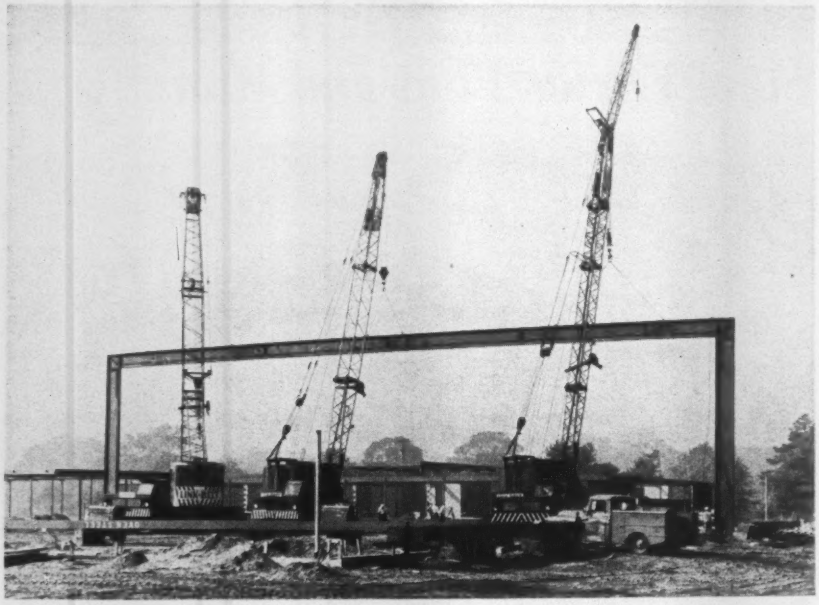
Bridge deck forms, moved into position on the traveler, are hoisted into position by eight winches. The hinged sides are raised and secured with bolts. Each span requires about 100 cu yd of concrete.

The two 30-ton pier cap forms are the same width as the bridge deck units, but only 24 ft long. Each breaks down into 18 major components for handling by manual hoists and follow-up reassembly. The forms are bolted together. Workmen position the forms on pins in the piers. Two adjustable horizontal shafts add balance and temporarily support the weight of the cap. Each cap requires about 98 cu yd of concrete.

H. D. Case, president of the contracting firm, says his men place and prepare a bridge deck form and pier cap unit for concreting, and strip both in about 17% of the time required to put in shoring and wood forms. He also expects to reduce estimated costs 10%.

Concrete is provided by a 900-cu-yd per day capacity batch plant and placed with two cranes with 1-cu-yd buckets. All forms remain in place for seven days after concrete is placed.

The expressway, including the bridges, is being built for the Bureau of Highways, Department of Public Works, Baltimore. Consulting engineers Knoerle, Graef, Bender and Associates of Baltimore designed the expressway.



Plastic Design for Lean Frame

Plastic design reduced by 15% the amount of structural steel required for the National Guard Armory in Savannah, Ga. The seven rectangular rigid frames that span 120 ft across the $625,000 structure reportedly represent the longest erected span in the U. S. designed by the plastic theory.

In each 15-ton bent, the 33-ft-high columns and the 120-ft girder are 33WF152 sections. Depth-span ratio of the girder is 1:44.

Purlins, 12 in. deep, span the 20 ft between bottom girder flanges. This leaves most of the girder webs and their top flanges exposed above the roof deck. Columns also will be exposed.

The steel erector assembled the frames on the ground in horizontal position.

Four butt-welded field splices joined the five fabricated units of each bent (two inverted L-sections and three straight girder sections).

Three crawler cranes tilted the first frame upright and walked it into position. Two cranes sufficed to erect the remaining six frames, after the erector found that they were sufficiently rigid.

Architects-engineers are Thomas-Driscoll-Hutton. The general contractor is Hugh Jackson, and the steel erector is Steel Rectors, Inc. All are from Savannah.

(*Field and Office continued p. 64*)

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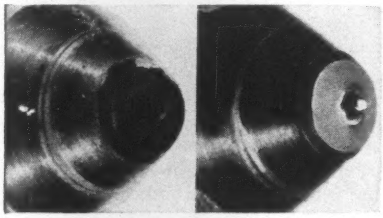
Why a new Diesel Fuel Conditioner?

There are a number of fuel additives on the market today, and you have probably tried several— with disappointing results

There long has been a recognized need for a diesel fuel conditioner that would reduce costs of injector maintenance and keep engines running smoothly longer. Noting this need—obvious in the high cost of equipment downtime for injector maintenance—D-A Lubricant began research and development of an entirely new fuel conditioner to aid combustion and minimize injector maintenance. *The primary objective was to reduce the deposits which form on the surfaces of injector tips.*

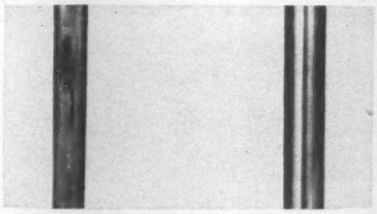


Injector tips after 70,000 miles of operation. *Left*—With no fuel treatment. *Right*—Using fuel treated with 1 oz. D-A Diesel Fuel Conditioner per each 25 gallons.

The result of extensive research and field testing over a period of three years, is an ashless organic compound specifically designed to aid combustion, stabilize diesel fuels at high temperature, and mix without agitation.

Why D-A Diesel Fuel Conditioner is distinctive

It aids combustion by maintaining varnish-free, deposit-free parts in the injector system. *It positively prevents carbon deposits on injector tips.* It reduces gum and lacquer deposits on injector plungers and prevents rust and corrosion of all fuel system components. This product is unlike anything you have ever tried before. The new conditioner mixes easily with any diesel fuel by itself, with no shaking or stirring—as it is poured into the fuel, it diffuses evenly throughout.



Injector plungers after 70,000 miles. *Left*—Untreated fuel. *Right*—Treated fuel.

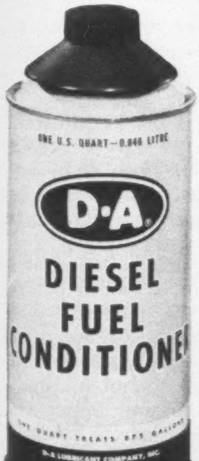
What D-A Diesel Fuel Conditioner will do for you

This product will eliminate the need for backflushing and will keep all injector parts free of deposits, thus helping to maintain perfect spray patterns which result in better combustion. It will substantially extend periods between injector rebuilding or replacement and it will extend fuel filter life.

Treatment costs will average only slightly more than 1/4¢ per gallon of fuel. Actual tests prove that fuel consumption can be reduced as much as 10%.

Proof of what D-A Diesel Fuel Conditioner has done

After laboratory testing, the new diesel fuel conditioner was extensively tested in the field. A typical result is: *A large trucking company has been using D-A Diesel Fuel Conditioner for ten months. Backflushing has been completely eliminated. The injectors were clean after more than 100,000 miles, and are still giving top service with no downtime or maintenance*


ONE U.S. QUART—0.946 LITRE
D·A
DIESEL
FUEL
CONDITIONER
ONE QUART TREATS 875 GALLONS
D-A LUBRICANT COMPANY, INC.

What D-A Diesel Fuel Conditioner cannot do

D-A Diesel Fuel Conditioner is *not* a complete engine cure-all, nor is it a fuel system overhaul in a can. It *cannot* re-activate worn out parts. It is *not* a magic formula that will somehow cure all of your maintenance problems.

D-A Diesel Fuel Conditioner is *not* a fuel supplement — it will *not* increase the BTUs. It is *not* a fuel "booster." It reduces fuel consumption solely by keeping injector tips clean and helping to maintain a perfect fuel spray pattern over a longer period of operation.

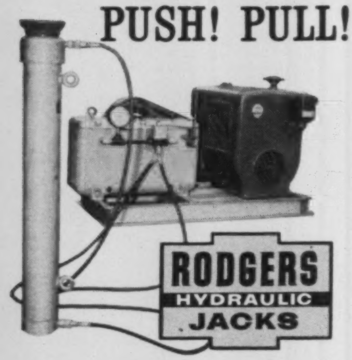
How D-A Diesel Fuel Conditioner is used

D-A Diesel Fuel Conditioner is available in cases of twelve one-quart cans. Each can is fitted with a cap so that the proper dosage can be easily measured—one cap full for each twenty-five gallons of fuel. One quart treats 875 gallons. The new D-A Diesel Fuel Conditioner is stocked in over fifty warehouses in the United States.

For further information or the name and address of the D-A Representative in your area, phone or write

D-A LUBRICANT COMPANY, INC.
Indianapolis 23, Indiana

LIFT! PRESS!
PUSH! PULL!



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High Intensity Lighting Pays Off

New York State highway planners are taking another look at interchange lighting requirements as a result of a high-intensity mercury installation in Kingston, N. Y.

New York's standards call for 0.8 to 1.0 footcandles of maintained light for interchange main travel lanes. At Kingston, lighting is designed to produce 4.3 footcandles of illumination.

In the design stage, some engineers wondered if the lighting would not be too bright for the purpose.

The new lighting, which was completed last year, has become very popular, according to State Department of Public Works engineers George Turnes, K. G. Raver, and James Spratt. They said that following the successful application of higher light levels to such an interchange, DPW engineers might be guided in future installations to raise lighting specifications.

The plans were drawn by R. L. Strickland, Central Hudson Gas and Electric Company engineer, who presented the high-level specifications with local state public works designers, to state officials in Albany.

The General Electric 20,000-lumen mercury vapor luminaires are mounted at strategic locations to produce a high-intensity bath of light for the center of the interchange, with staggered spacing as close as 25 ft.

On the straightaways, where a calculated initial footcandle level of 3.3 was the target, the 400-watt mercuries are placed in staggered pattern about 75 ft apart. The luminaires are mounted at 30 ft above the road with a 4-ft overhang.

Expansion Joint Saves Pipeline

A clever reversal of an expansion joint's normal function was used recently to rescue a vital water pipeline in California.

Frequent breaks threatened the line at the U.S. Navy Electronics Laboratory at Point Loma. Investigators later traced the cause of the breaks to an earth separation which crossed the 6-in.-dia line's path.

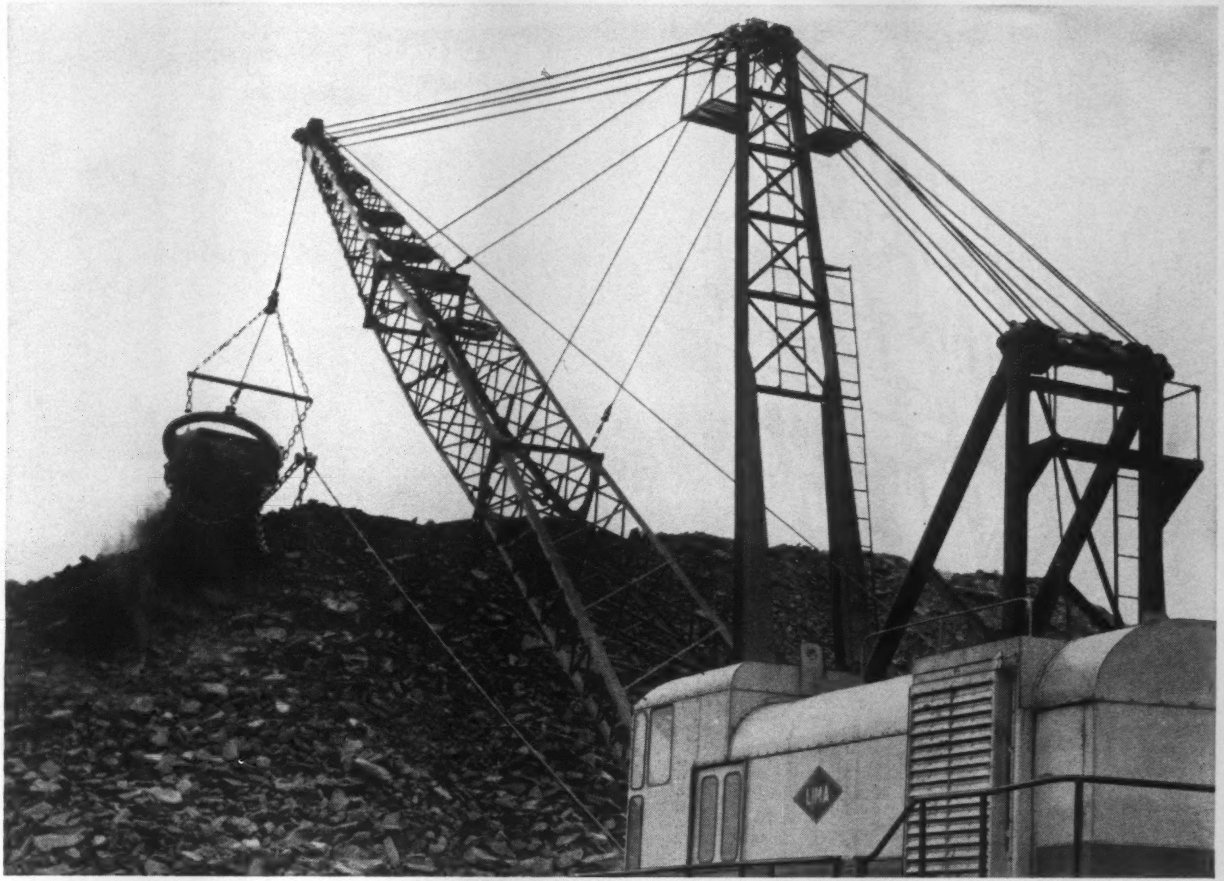
A gap that widened at the rate of about $\frac{5}{8}$ in. a month placed an undue stress on the pipeline.

The crack, approximately perpendicular to the water line, results from slippage of several million cubic yards of alluvium and upper strata of siltstone and shale. Several breaks appeared in 1958 when initial earth movement displaced the eastern part of the pipeline through a drop in elevation.

Repair crews tried a makeshift connection with a short piece of pipe and two flexible couplings But leaks persisted and the couplings needed periodic readjustment.

Crews have recently repaired the line with a 6-in.-dia semi-guided expansion joint. Usually, such joints are installed in an open position to close as the line expands, in this case the joint was installed closed. Gradually as the separating earth pulls on the line the joint is forced open.

Joints used were Adsco 150# expansion joints made by Yuba Consolidated Industries. Since their installation at Point Loma there have been no breaks in the water line.



One of the country's largest and most successful strip-mine operators, Bailey Coal Company of Morrisdale, Pa., uses Double Gray-X drag ropes on their Lima 2400 dragline.

These DOUBLE GRAY®-X drag ropes lasted 35% longer

Here's further proof that CF&I-Wickwire's Double Gray-X lasts longer than other wire ropes on the toughest jobs.

At the Bailey Coal Company's Rolling Stone strip mine in the bituminous fields of Pennsylvania, two 190-foot Double Gray-X drag ropes were installed on a Lima 2400 dragline. Under operating conditions that subject wire rope to the most severe punishment, these drag ropes proved themselves superior to any others previously used. They didn't break up as fast near the shovel's crow's foot, where torsional stresses are the greatest . . . and they stayed on the job *35% longer than the average for high-strength ropes of well-known brands previously used.*

Double Gray-X lasts longer on the toughest jobs because it's the result of an entirely new and exclusive wire-drawing technique. The use of molybdenum disulphide in this process creates a molecular shield around every wire that prevents the individual wires from grinding together as the rope operates . . . provides a smoother wire surface with greater fatigue-resistance . . . and preserves the inherent toughness of the wire during drawing.

The result is a rope that just *won't quit early*. Double Gray-X can lower your wire rope replacement and repair costs, and cut the fat off your equipment downtime costs. Ask your Wickwire distributor or CF&I sales office for complete details.

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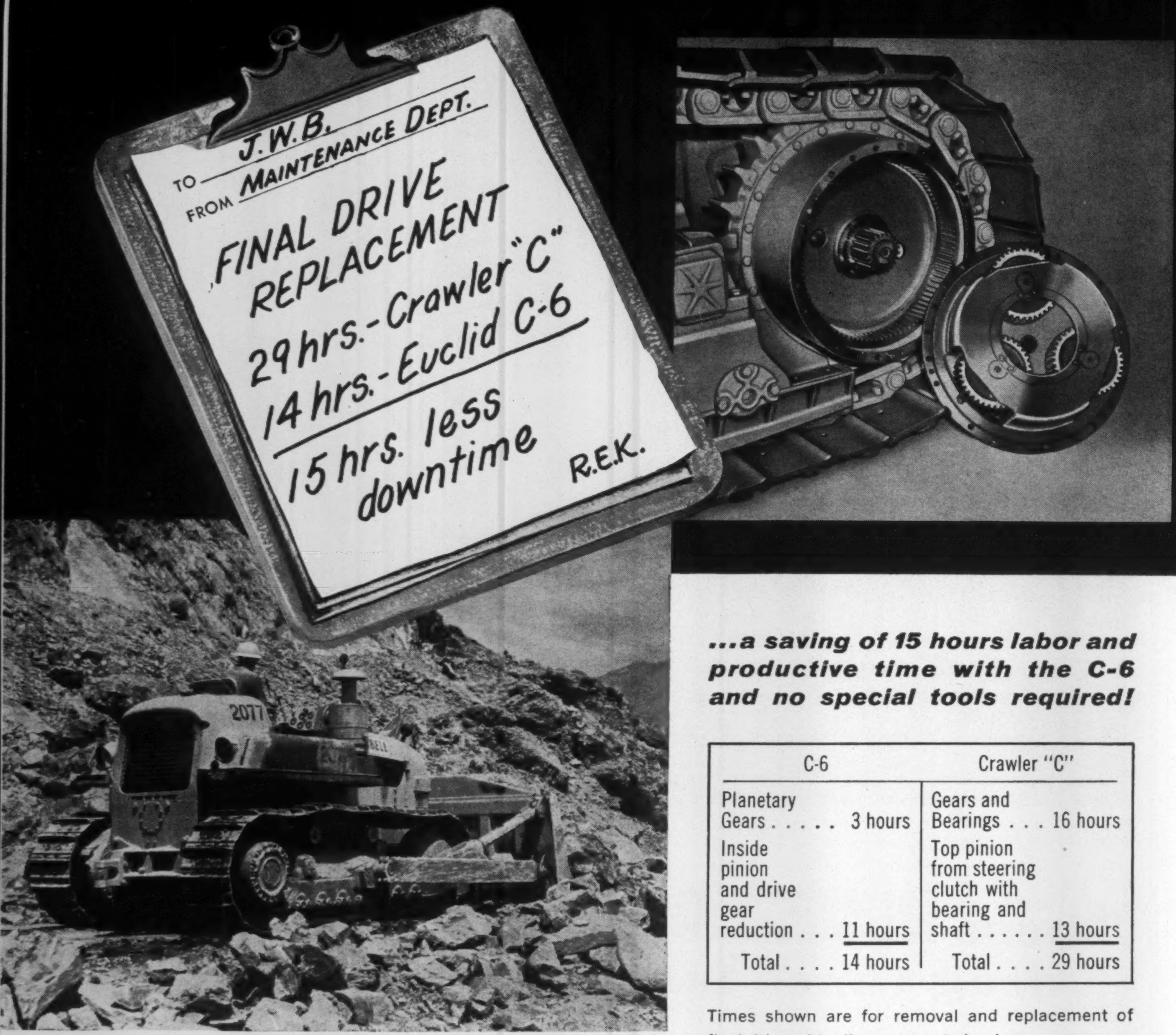

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C-6		Crawler "C"	
Planetary Gears	3 hours	Gears and Bearings . . .	16 hours
Inside pinion and drive gear reduction . . .	11 hours	Top pinion from steering clutch with bearing and shaft	13 hours
Total	14 hours	Total	29 hours

Times shown are for removal and replacement of final drive with all components in place.

With a 15 hour saving for final drive replacement the "Euc" C-6 gives you 15 hours more productive time on the job! Easy accessibility that's designed into the C-6 and Euclid's time-tested planetary drive save hours of repair labor . . . that means less downtime and more production. Compare these savings in terms of lower costs . . . add the extra hours available for work on the job . . . then you'll see what just this one advantage can do in cutting operating cost.

▲ The Euclid dealer in your area would like to prove that the C-6 is the lowest cost tractor in the 200 h.p. class . . . and the most versatile by far. He's sure of it, and wants you to know the facts, too!

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EUCLID

DIVISION OF GENERAL MOTORS, HUDSON, OHIO
Plants at Cleveland and Hudson, Ohio and Lanarkshire, Scotland

New Products

Heavyweight Truck Crane Will Hoist 90-Ton Load

The P & H Model 890-TC is claimed by its manufacturers to be the largest machine of its kind in the world. It is capable of lifting 90 tons and of handling up to 200 ft of boom and a 50-ft jib.

The machine is carried by a four-axle 12-wheel carrier which has planetary axles and a 280-hp diesel engine.

The 890-TC has a working weight of 133,820 lb but to meet load restrictions this weight can be reduced to about 92,000 lb, by the removal of counter-weight, outrigger housing and beams, and boom. HARNISCHFEGER CORP., 4445 W. NATIONAL AVE., MILWAUKEE 46, WIS.

Imported Fan Offers Variable Axial Flow

Variax, a Danish line of standard and custom built, variable-axial-flow fans designed for induced, forced draft in power stations, factories and mills, will be distributed in the U. S.

The Variax fan is controlled by variation of blade pitch, thus assuring constant speed and minimizing power needed for regulation. Snap-out blades are available to offer a variety of fin structures. Both horizontal and vertical installations may be obtained for restricted access areas.

To prevent impurities from penetrating into the regulating components, Variax fan hubs are all enclosed. For longer blade life, all blades are reinforced on the wearing edges. The fly wheel's critical speed is 20% above the fan's operating speed.

Standard capacities range from 50,000 to 1,100,000 cfm. The maximum operating temperatures of standard models is 400 F. NOVENCO INC., 69 FIFTH AVE., NEW YORK 3, N. Y.

Electric Generator Line Provides Portable Power

A new line of 1-kw to 5-kw portable electric generating plants is intended for use in standby installations or sites beyond the reach of power lines.

The generators are 60-cycle, ac single phase. They have two-pole armatures with inherent voltage regulation. They are powered by 3,600-rpm gasoline engines.

Manufactured by the LELAND OHIO ELECTRIC CO., the generators are marketed by the TAIT MFG. CO., 500 WEBSTER ST., DAYTON, OHIO.

How do you stand on Grating?

Is all grating just "grating" to you? Or do you know all the types and materials available from Blaw-Knox? Take Blaw-Knox 36-bar and 37-bar grating for instance. Only ½″ and ⅜″ between bearing bars respectively. Its close mesh design is better for standing or walking, yet gives plenty of space for ventilation, light passage and self-cleaning . . . extra strong too. Especially recommended for sidewalk openings or ventilators or wherever there is maximum foot traffic.

It is Electroforged®, of course. Crossbars and bearing bars become one for maximum strength. Can be supplied with Blaw-Knox long-wearing, corrosion-resistant "Ponbake" finish.

FREE BULLETINS—Bulletin 2581 will give you helpful information on grating. Ask for Bulletin 2595 too for more specific information on 36-bar and 37-bar grating. Write Blaw-Knox Company, Pittsburgh 38, Pennsylvania.

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GRATING

BLAW-KNOX

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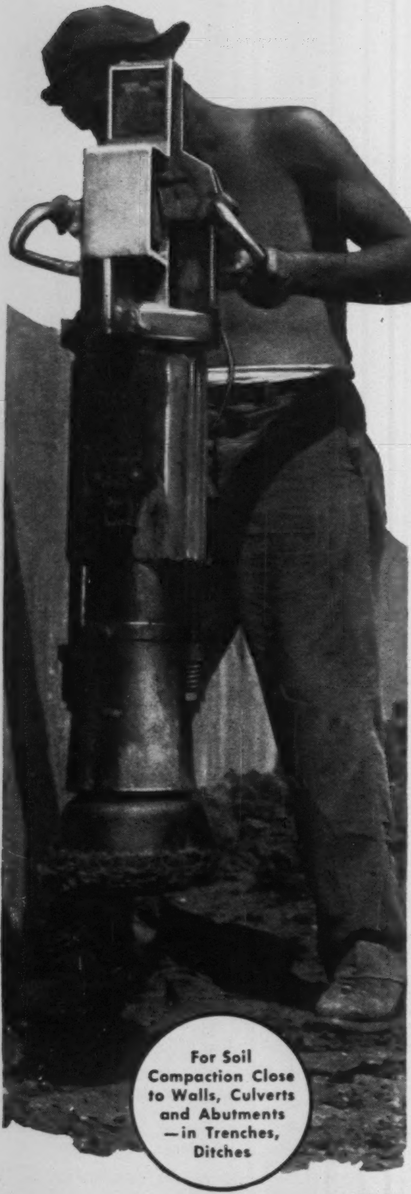

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New Product Briefs

Top Entry Ball Valves

"Evrtyte" line of top entry ball valves for on-off valving of gas, air, oil, water or liquid chemicals. One piece body constructed from cadmium-plated carbon steel or stainless steel bar stock. Threaded connectors available for ⅜ in., ½ in., ¾ in. and 1 in. lines. STRONG, 508 SANDUSKY STREET, CONNEAUT, OHIO.

Gallon-per-Stroke Hand Pump

Self-priming diaphragm hand pump can handle a high percentage of solids. It delivers 30 gpm. Made of cast aluminum with neoprene diaphragm and valves, it can be furnished for corrosive use with an interior plastic coating. PROTEK SPECIALTY CO., Box 194, BELLAIRE (HOUSTON), TEXAS.

Coatings

Adfinish, for concrete, brick, stucco and other masonry. Smooth or textured finish in colors. Applicable to interior and exterior walls, whether dry, damp, painted, old or new. SWIFT & CO., GENERAL ADHESIVE PRODUCTS DEPT., 4115 PACKERS AVE., CHICAGO 9, ILL.

For concrete floors. One application levels out holes and ruts to form a tough finish about $\frac{1}{32}$ in. thick. Expands and contracts with floor; compressive and tensile strength exceeds concrete. In four colors. THE GARLAND CO., CLEVELAND 5, OHIO.

End-Suction Pumps

Type GBH pumps, close-coupled end-suction design, intended for wide range of uses including air conditioning systems, cooling towers, boiler feed and condenser circulation. Capacities up to 1,600 gpm, heads up to 330 ft. Interchangeable mechanical seal or packing inserts. Optional water-jacketed inserts permit hot liquids up to 250 F. AURORA PUMP DIV., NEW YORK AIR BRAKE CO., AURORA, ILL.

Tension-Control Wrench

Air-powered, hand-gun type wrench offers tension control from 25% to 100% of the elastic limit of the bolt. Delivers full power in forward and reverse. Model 18B-7T for ¾-in. bolts; model 18B-9T, for 1¼-in. GARDNER-DENVER CO., QUINCY, ILL.

Portable Sandblaster

Model 28A, for fast, economical cleaning of equipment, welds and masonry. Also etches metal and glass. Weighs 24 lb; holds 28 lb of sand. Operates from 2 and 5-hp compressors, depending on nozzle used. Two nozzles, hose and blaster for $140. fob. Free freight for four or more units. HANDI-BLAST DIVISION, HAMILL MANUFACTURING CO., INC., WASHINGTON, MICH.

Asphalt Sealer

Coal-tar-based Blak-Top Sealer for industrial maintenance of driveways, yards, parking lots and airport runways. Quick drying, resists effects of sun, chemicals and petroleum. Nonflammable. Cost about $0.03 per sq ft. PSATY BROTHERS, 21 EAST 40TH ST., NEW YORK, N. Y.

Concrete Buckets

Steep side slopes to accomodate stiffer concrete, low loading heights for loading up to 2 cu yd from ready-mix trucks. Vertical discharge; non-jamming and grout-tight, double clamshell gates close automatically. Gates can be rigged for remote control. Eight bucket sizes from ⅓ to 4 cu yd. GAR-BRO MANUFACTURING CO., 2415 E. WASHINGTON BLVD., LOS ANGELES 21, CALIF.

Acoustical Tile

Hansolux wood-fiber tiles have random scattering of fissures, giving a surface appearance of travertine marble. Slow burning, paintable. Available in 12 x 12 and 12 x 24-in. sizes, 9/16 in. thick. ELOF HANSSON INC., 711 THIRD AVE., NEW YORK 17, N. Y.

Masonry Coating

Surtiseal for concrete, stucco and other types of masonry. Apply to wet or dry wall, sidewalk or road. Protects against water absorption, temperature changes for 5 to 10 years. Paintable. GUARDIAN CHEMICAL CORP., 38-15 13TH ST., LONG ISLAND CITY 1, N. Y.

Turbine Pump

For high head, low capacity service in power plants, laundries, general water service, etc. Has multivaned impeller that develops high heads in a single stage. Replaceable casing plates and impeller. Inlet pressures up to 150 psi. WORTHINGTON CORP., HARRISON, N. J.

Valve

"Moisture Minder" valve is designed to eliminate water and oil condensation from compressed air lines without lowering the pressure. Attaches to existing systems without cutting lines. Threaded to fit ¼ in. pipe, valve is 6 in. long and ¼ in. in dia. BARGER MFG. CO., MINNEAPOLIS 2, MINN.

Arc Welder

Low cost, midget size: $995 (Zone 1), including gun and 34 x 26 x 20-in. power source. Arc adjusted at power source, wire feed adjusted at gun. Source is 200 amp, dc, 60% duty cycle. Gun operates up to 50 ft from power source. AIR REDUCTION SALES CO., 150 E. 42ND ST., NEW YORK 17, N. Y.

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Chemical Grout

FA-40, a liquid chemical for solidifying pervious soil. For subsurface water control in excavations and mine shafts; and for strengthening soil to support loads and to stop settlements and lateral movements. Solidification takes from seconds to days, at user's control. It gives sandy soils the characteristics and appearance of soft sandstone, says the maker. DIAMOND ALKALI CO., 300 UNION COMMERCE BLDG., CLEVELAND 14, OHIO.

Improved Ejector Controls

No-Fail electrode system, an improvement now incorporated into Mon-O-Ject and Du-O-Ject pneumatic sewage ejectors, guards against grounded or coated electrodes. When either of those two basic failures occur, an automatic control system switches to timed discharge cycles, and indicator lights on control panel warn operator that unit is operating under failure conditions. SMITH & LOVELESS DIV., UNION TANK CAR CO., LENEXA, KAN.

Adhesive

Ankweld, a two-surface contact cement. For bonding plywood panels to wall studs, or for laminating virtually any material to plywood or hardboard. Resistant to water, oil, gasoline and temperature extremes. Spray or brush applied. ANCHOR ADHESIVES CORP., 36-23 164TH ST., FLUSHING 54, N. Y.

Improved Throttle Valve

Position indicator added to firm's Rotovalve, a standard hydraulically-operated throttle valve. New device allows more accurate settings. ALLIS-CHALMERS MFG. CO., MILWAUKEE 1, WIS.

Arc Welder

Compact, lightweight ac transformer-type for general maintenance welding. Amperage range from 40 to 225, electrode diameters from the smallest to $\frac{3}{16}$ in. Takes 220-volt, single-phase power. LINCOLN ELECTRONIC CO., CLEVELAND 17, OHIO.

Color-Coded Conduit

Galvanized rigid-steel, with baked on polyvinyl coating and pigments. Available in all sizes, and in five colors with matching elbows and couplings. H. K. PORTER CO., INC., NATIONAL ELECTRIC DIVISION, PORTER BUILDING, PITTSBURGH, PA.

Hydraulic Pump

Reciprocating hydraulic pump called Variacs has variable volume. Designed to operate attachments on heavy equipment like tractors. Works on demand. Pumps only amount of oil needed. No oil pumped in hold position. Saves horsepower for traction when hydraulic system not in use. Advantages cited: longer life and improved fuel consumtion. GAR WOOD INDUSTRIES, INC., WAYNE, MICH.

Water Pressure Control

Accupressure is Allis-Chalmers' name for a new water-pressure-control system that does the same job as a roof or basement pressure tank for a building. The system consists of a centrifugal pump, a constant-speed motor, and a fluid drive and control. The control senses water pressure in the pipes and regulates the depth of a scoop tube on the fluid drive accordingly, thus speeding or slowing the pump. Range of sizes 3 to 200 hp, 50 to 5,000 gpm. Maintains pressure within 2% limit. ALLIS-CHALMERS MFG. CO., MILWAUKEE 1, WIS.

Bar Cutter

Self-contained, hand-operated, hydraulic-powered. For soft metals up to $\frac{3}{4}$ in. in diameter and medium-hard metals up to $\frac{5}{8}$ in. in diameter. H. K. PORTER, INC., SOMERVILLE 43, MASS.

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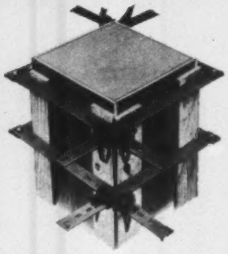

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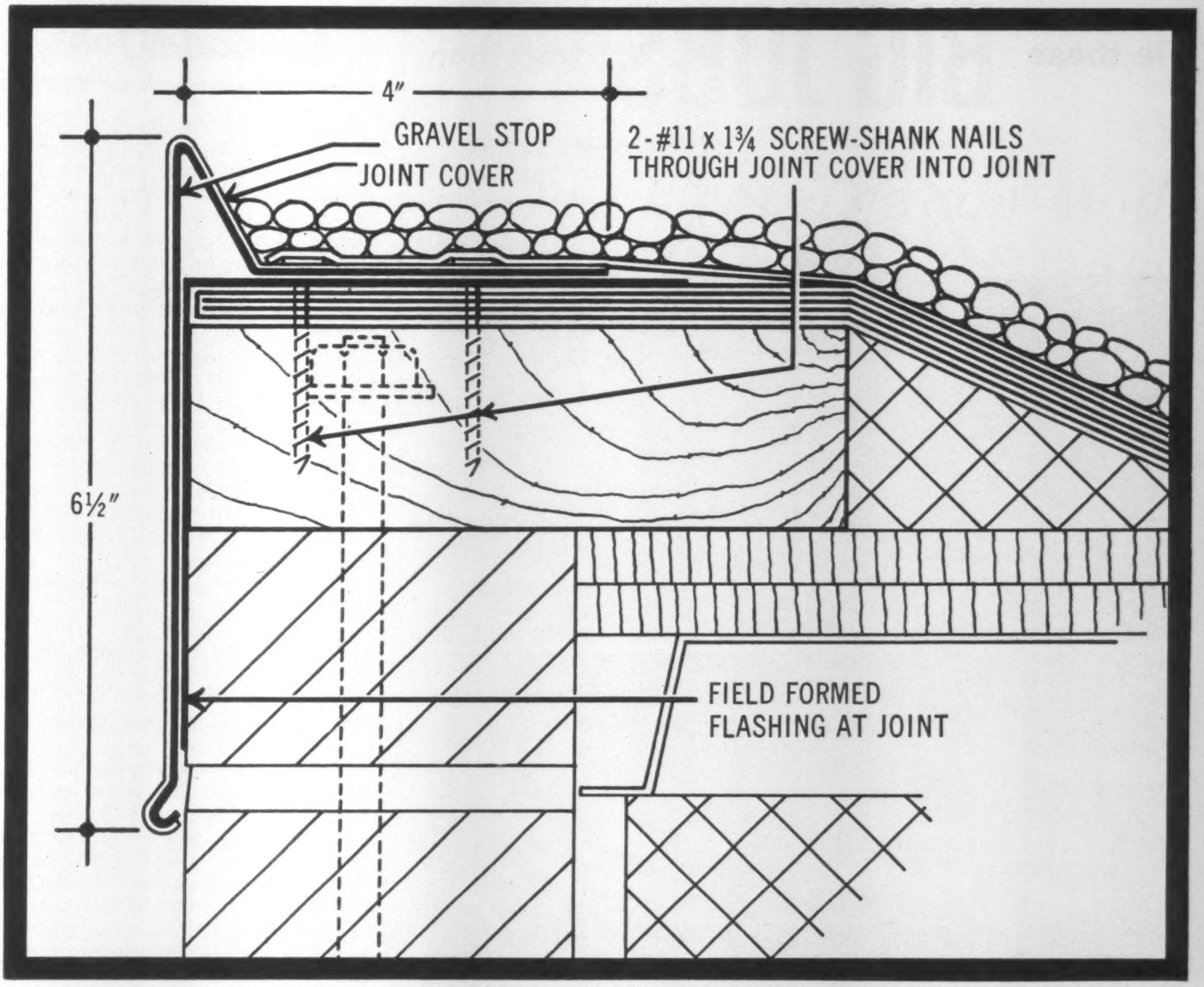
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GRAVEL STOP
JOINT COVER
2-#11 x 1¾ SCREW-SHANK NAILS THROUGH JOINT COVER INTO JOINT
6½"
FIELD FORMED FLASHING AT JOINT

Alcoa's new extruded gravel stop includes fascia, integral cant strip, concealed joint covers and mitered corners.

NEW ALCOA ALUMINUM GRAVEL STOPS

Extruded for greater strength, greater economy

Alcoa's new redesigned line of gravel stops gets its added backbone and stiffness from the extrusion process—metal squeezed through a die, giving a permanent set to the shape.

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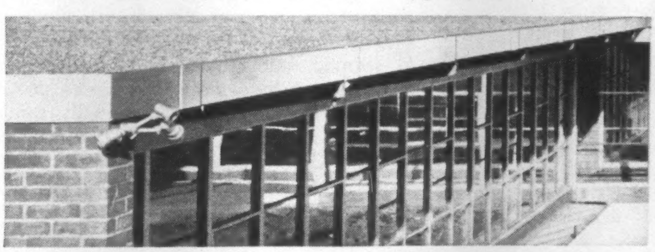
Five functional and attractive types, in fifteen sizes. Cost? Alcoa long ago mastered the craft of extruding. For us, it's an economical process, so our production savings are passed along to you in the form of lower prices.

Consult Sweet's File or contact your nearest Alcoa sales office for technical details. Or write Aluminum Company of America, 816-G Alcoa Building, Pittsburgh 19, Pa.



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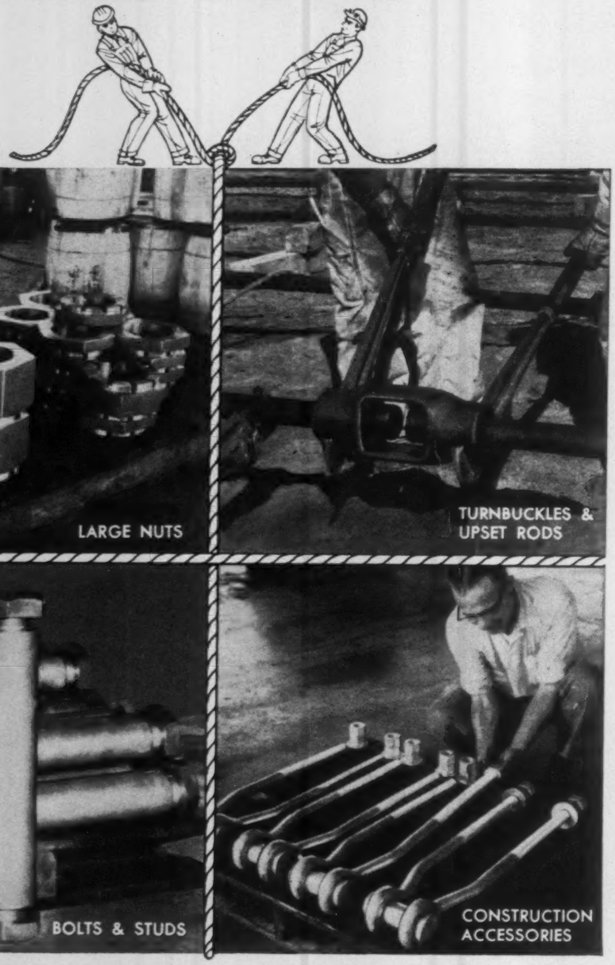

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DYSON
TRADE MARK

Men and Jobs

Edwin B. Morris, Jr., former architectural consultant to United States Steel Corp., has been appointed an associate of the New York City Architectural firm of Urbahn & Brayton. Before joining U.S. Steel, he was Assistant Executive Director of the American Institute of Architects.

John B. Rutherford and **Constantine C. Chekene** have formed a partnership to be called Rutherford & Chekene, for civil and structural engineering at 259 Geary St., San Francisco. Mr. Chekene formerly was a partner in Schramm, White, Wong & Chekene in San Francisco, and Mr. Rutherford has been practicing under his own name in Los Altos, Calif.

Edward J. Hills and **Maurice Medcalf,** both architects of New York City have formed the partnership of Hills & Medcalf at 36 E. 57th St., New York 22, N. Y. Mr. Hills has been with Fordyce & Hambly Associates of New York for the past ten years. Mr. Medcalf was with Harrison & Abramovitz before opening his own office last year.

E. S. Thompson, retired Air Force lieutenant colonel, will head an architectural-engineering office in Honolulu being opened jointly by Austin, Field & Fry, Los Angeles, and Frank Slavsky, Honolulu. While in the Air Force, Mr. Thompson was assistant resident engineer in the Marshall Island Proving Grounds of the Atomic Energy Commission.

The consulting engineering firm of Stevens & Conkling has been formed by **Jack D. Stevens, Roger L. Conkling** and **Robert C. Wilson,** with offices in Seattle and Portland, Ore. Mr. Conkling, who will manage the Portland office, is a utilities analyst. Mr. Stevens, with Mr. Wilson as an associate, has been consulting engineer for the Puget Sound Utilities Council.

Marvin Gates has been named president and **Francis V. Rossi** vice president-treasurer of the newly formed Construction Estimating, Inc., a quantity and cost estimating service for heavy construction in South Windsor, Conn. Both are civil engineers who have done consulting in the New England area.

Architects **Robert F. Crump, Robert A. Kissinger** and **Kenneth B. Koehler,** and designer **Richard C. Scott** have formed Associated Architects in Louisville and Jeffersonville, Ky. All except Mr. Kissinger have been with Louisville architects Arrasmith & Tyler; Mr. Kissinger formerly was with Hartstern, Louis & Henry, architects also of Louisville.

Obituaries

Henry Tammen, 76, inactive partner and special consultant in Howard, Needles, Tammen & Bergendoff, New York and Kansas City, Mo. He retired from active partnership in 1949. A specialist in movable bridge design, he helped to design the Harlem River lift span of the Triborough Bridge, New York; the Delaware Memorial Bridge, Wilmington; Passaic River lift span; Old Lyme-Old Saybrook Bridge, Connecticut, and the Edison Bridge over the Raritan River, Perth Amboy, N. J.

Robert J. Reiley, 82, retired New York City architect. He formed his own company in 1913. Before his retirement last year, he designed schools and churches in the New York area.

Lindsay P. Disney, 65, assistant chief of the marine data division of the U. S. Coast and Geodetic Survey. He made many contributions in the field of tide work and prepared the tidal current charts for several American harbors.

Clarence A. Ward, 51, vice president and treasurer of C. P. Ward, Inc., general contractors of Rochester, N. Y. A younger brother of the founder of the firm, Mr. Ward directed most of the company's activities since 1956.

Leroy F. Hawke, 59, a director of the Interstate Highway Division that operates the Delaware Memorial Bridge near Wilmington, Del. From 1949 to 1954, Mr. Hawke was secretary of the Delaware Highway Commission.

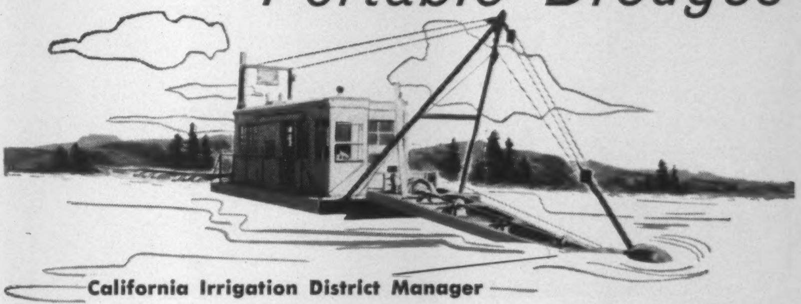
Alvin Garcia Cadiz, 68, an authority on waterfront erosion. He was consultant in the restoration of the Atlantic Ocean front area of Southampton after the 1938 hurricane. He graduated from Cornell University in 1915 as a civil engineer.

Hugh Pomeroy, 62, commissioner of planning for Westchester County, N. Y. since 1946. As director of the Los Angeles County Regional Planning Commission in the Twenties, he wrote one of the first county zoning ordinances in the U. S. From 1939 to 1942 he was director of the Virginia State Planning Board.

Robert E. Herlihy, 69, general superintendent, Herlihy Mid-Continent Co., Chicago, died July 1. He was one of the founders of the 45-year-old construction company which built several sections of Chicago's double-deck Wacker Drive. He was considered an expert on caisson and deep foundation construction.

OWNERS
REPORT

On Ellicott Dragon® Model Portable Dredges



California Irrigation District Manager
O. E. Simmons, Palo Verde Irrigation Dist., Blythe, Cal., says, "All checks indicate the dredge is exceeding the specified capacity. Our operators frequently comment on the simplicity of operation and the small amount of effort required to handle the control system."

Georgia Dredging Company Official
James G. Hardee, III, Chatham Dredging Co., Savannah, Ga., reports, "We are well pleased with the operation of our DRAGON's all-hydraulic system. It is excellent. It has insured very economical ease of operation."

Ohio Municipal Water Department Director
W. T. Eiffert, Dayton, Ohio, writes, "We have never received such a complete piece of equipment, nor have we ever received such complete training in the operation of a new piece of equipment."

Florida Real Estate Developer
Leonard Mulbry, "Venezia," New Smyrna Beach, Fla., states, "We have been more than satisfied with the production and operation of our Ellicott DRAGON. It is well engineered, accurately constructed and economical to operate. We have determined the value of obtaining a completely engineered dredging unit from a reputable manufacturer rather than building one ourselves or obtaining one from a less well-established firm."

Other satisfied users of Ellicott DRAGONS have made similar statements, all of which testify to the DRAGONS' top-flight design, quality Ellicott components and proved performance. When you are considering the purchase of a dredge to excavate underwater earth materials, we will be glad to furnish the technical details on the correct DRAGON for your project.

A comprehensive brochure describing the complete line of standardized DRAGON model dredges and their wide variety of applications has been prepared for you. Simply fill in the handy coupon and your copy of Bulletin 980 will be mailed promptly.

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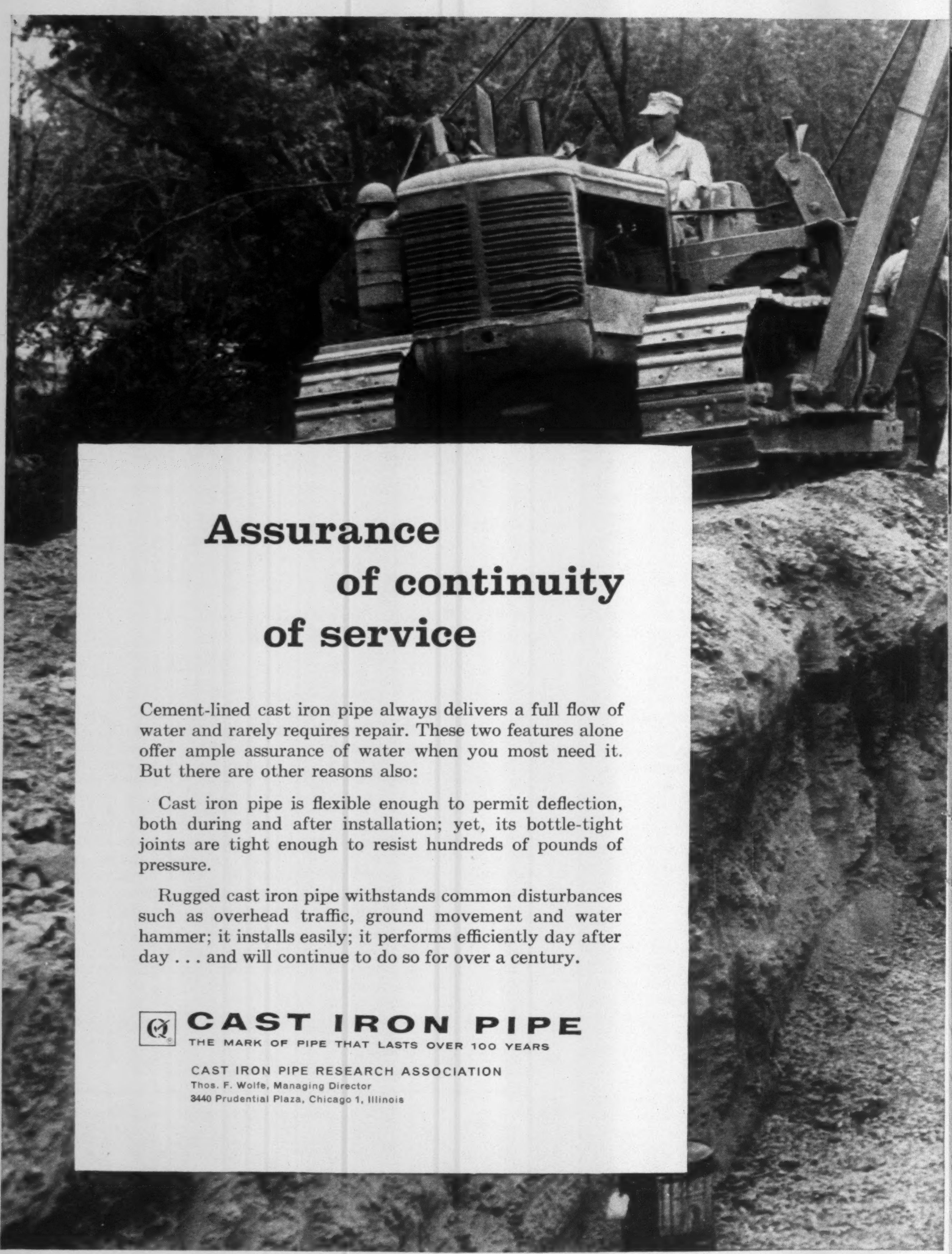

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Cast iron pipe is flexible enough to permit deflection, both during and after installation; yet, its bottle-tight joints are tight enough to resist hundreds of pounds of pressure.

Rugged cast iron pipe withstands common disturbances such as overhead traffic, ground movement and water hammer; it installs easily; it performs efficiently day after day . . . and will continue to do so for over a century.

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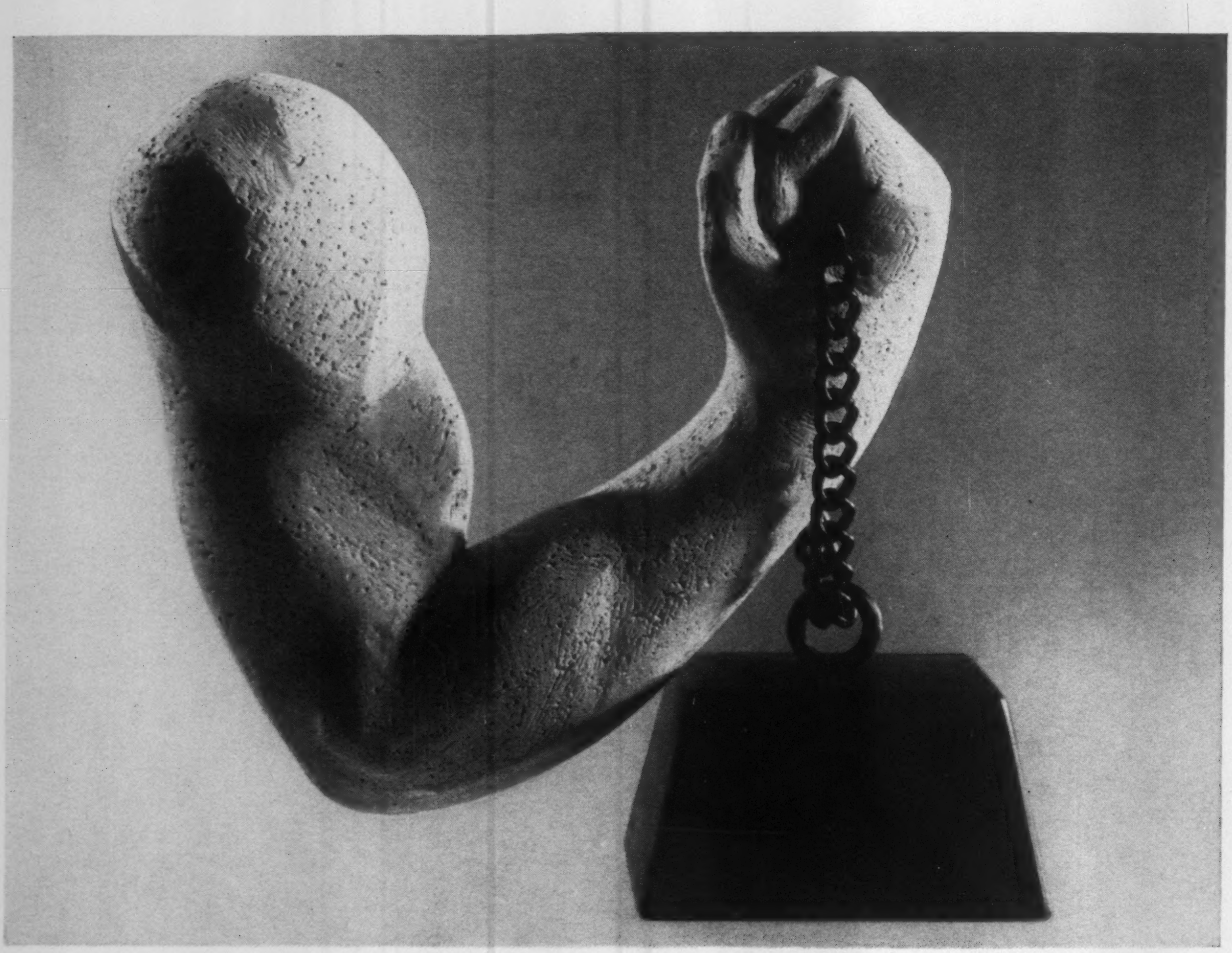

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. . . the liquid admixture that gives you 5 key controls of concrete

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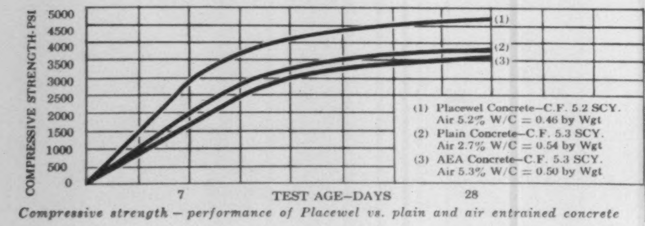
Placewel is a water-reducing, dispersing agent *plus* a catalyst. It is available with or without an air entraining agent. Placewel, by breaking up the cement flocs, releases water for lubrication that isn't normally available. Thus, mixing water requirements are cut without relying on air entrainment alone. The Placewel catalyst enhances the strength-gaining characteristics of portland cement. This unique combination of properties provides a 30% increase in concrete strength (see chart).



Compressive strength – performance of Placewel vs. plain and air entrained concrete

Less than three ounces of Placewel per sack of cement will also –

- Increase durability 350%
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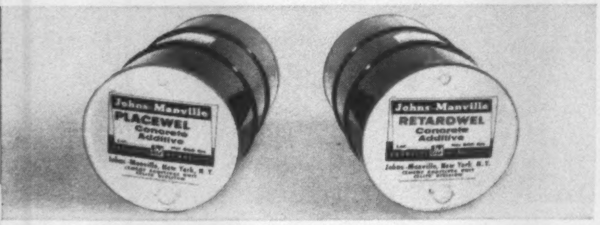

Concrete prices capture highway job as

Arkansas Relocates State Road

McGeorge Contracting Co., Inc., Pine Bluff, Ark., with $48 concrete, took this highway relocation contract at $733,764. This was only a 1.2% margin under the Reynolds & Williams, Little Rock bid, but 19.1% under the high of five bids.

This relocation of sections 4 & 5, State Highway 1, includes 5.8 miles of grading, minor drainage structures, plant mixed crushed stone base, double bituminous surface treatment, and three bridges accounting for 622 feet. Two are reinforced concrete slab spans, and one a reinforced concrete and structural steel I beam span.

McGeorge Contracting Co. scored with concrete prices, at $48.00 a yard for both 142.26 cu yd of class A concrete, and 865.10 cu yd of class S. This was $2.00 to $16.00 a unit below other bids for class A, and from $4.50 to $10.00 below for class S.

Union wage rates in the Arkansas county area include: carpenter, $3.20/hr; bricklayer, $3.70; and common laborer, $1.75.

The bidding included:

1C	McGeorge Contr. Co., Inc., Pine Bluff, Ark.	$733,764
2	Reynolds & Williams, Little Rock, Ark.	742,641
5	L. S. Company, Inc., Lake Village, Ark	906,785

Bids: 4-19-61 Items	Unit	Quantity	Unit Prices 1C	2
Clearing	acre	38.42	$150.00	$200.00
Grubbing	acre	25.08	150.00	100.00
Exc, common	cy	172,352	0.33	0.325
Embankment material	cy	336,295	0.39	0.455
Comp, spec, of earthwork	cy	506,372	0.05	0.04
Overhaul	¼ miy	34,377	0.08	0.10
Base course, plant mixed crushed stone, cl 5B-2	cy	54,683	4.99	4.64
Prime coat	gal	34,823	0.17	0.18
Aggregate, mineral, in bit surface treatment, cl 10	cy	2,442	7.75	7.50
Asph, in bit surf treatment	gal	58,603	0.17	0.18
Exc, common for str	cy	196	4.00	3.50
Concl, cl A	cy	142.26	48.00	64.00
cl S	cy	865.10	48.00	56.00
Steel, reinf	lb	191,473	0.13	0.115
Conc piling, precast, 16" octagonal	lf	4,514	7.50	8.00
Railing, plate guard bri, steel or aluminum	lf	1,320	6.00	5.00
Steel, str, in beam spans	lb	237,500	0.144	0.155
Name plates, bri, tp C	ea	3	25.00	25.00
RCP culv, cl 3, 24"	lf	772	6.50	6.60
30"	lf	188	9.00	8.80
36"	lf	96	11.00	12.00
42"	lf	144	15.00	15.00
48"	lf	368	17.50	17.75
CMP, arch, culv, 1.5 sf waterway	lf	160	4.10	4.50
2.8 sf waterway	lf	96	5.50	6.75
4.3 sf waterway	lf	40	8.25	8.25
Pipe underdrains, 6"	lf	500	3.00	3.00
Fence, guard, tp A	lf	342	5.00	4.50
Delineator posts	ea	197	10.00	9.00
Seeding	acre	42.42	250.00	250.00
Water for grass	Mgal	616	4.00	2.00
Markers, right-of-way	ea	150	4.00	4.50
Siphons, pipe, 18"	lf	300	7.50	10.00
Bri str, exist, remove	ea	1	3,500	4,000
Surface course, remove & replace	cy	950	1.25	1.50
Curb & gutter, cmt conc, 2' 9"	lf	2,535	2.65	2.75

Starting date: 6-1-61
Completion time: 220 working days
ENR Construction Cost Index (1913=100) 20-cities average —837.58

West Virginia Sewerage Costs $20.75 Per Capita

This $103,707 sewerage system, designed for 5,000, will serve the 3,000 people of Ripley, W. Va. The contract went to the Harold Schritter Construction Co., South Point, Ohio, on a low bid that was 7% under second low, Winter Construction Co., Ripley, and 20% below the high of eight. Kelley, Gidley & Staub, Inc., Charleston, W. Va., are the engineers.

The system includes two waste stabilization ponds with water surface areas of 12.5 and 9.9 acres, and water depths from three to five feet.

The design per capita cost of the waste ponds based on the low bid is $6.27, and the cost per acre based on water surface area, $1,400.

Wage rates include: carpenter, $3.775/hr; and common labor, $2.55.

The bidding included:

1C	Harold Schritter Const. Co., South Point, Ohio	$103,707
2	Winter Const. Co., Ripley, W. Va.	111,482
8	Mountan State Const. Co., Charleston, W. Va.	129,460

Bids: 3-31-61 Items	Unit	Quantity	Unit Prices 1C	2
Site preparation	ls	job	$5,000	$3,190
Dike const, grading	cy	25,000	0.60	0.61
temporary, inlets & outlets	ls	job	1,550	9,071
Fencing	lf	4,715	1.00	0.695
Dikes, seeding	lf	5,530	0.50	0.49
Road, access	sy	770	3.00	2.50
Exc, trench, & backfill				
0'–6'	lf	510	2.00	2.00
6'–9'	lf	1,550	5.00	3.15
9'–12'	lf	70	8.00	9.00
12'–15'	lf	190	12.00	12.00
15'–18'	lf	125	20.00	18.00
str	cy	10	25.00	4.00
rock	cy	20	40.00	10.00
Fill mat, special	t	5	20.00	6.00
Conc pipe encasement	cy	10	65.00	67.50
Sheeting, lip	Mbf	5	100.00	75.00
VCP, S.S., 6"	lf	160	3.00	1.76
8"	lf	1,850	3.80	2.34
E.S., 10"	lf	230	4.50	3.67
CI force main, 4"	lf	2,550	3.00	3.49
8"	lf	715	4.40	7.83
sewer, 6"	lf	110	4.00	6.27
MH, conc precast, complete				
0'–6'	ea	9	250.00	250.00
over 6'	lf	38	25.00	50.00
CI flap gate, 14"	ea	1	350.00	348.75
8"	ea	1	160.00	96.00
shear gate, 8"	ea	1	180.00	157.50
Flush connection at MH 2, Dwg 5907, 4"	ls	job	350.00	370.00
Connection to exist sew	ea	6	75.00	67.50
Lift sta, Central, compl	ls	job	18,000	20,783
West end, compl	ls	job	4,500	6,285
Sycamore Creek	ls	job	3,800	4,990
Vlvs, air & blow-Offs	ea	1	300.00	346.72
Surfacing mat, stone	t	20	6.00	6.00
Crossing, bore & jack casing, highway	lf	72	16.00	21.65
RR	lf	18	18.00	21.65
Crossing, Mill Creek, excl CIP 6" & 8"	ls	job	850.00	450.00
Sycamore Creek, incl steel pipe, 8", & piers	ls	job	980.00	766.50
Pvt & sidewalk, replace	sy	60	6.00	8.80
Repair sew, Sycamore Creek	ls	job	1,100	1,290

ENR Construction Cost Index (1913=100) 20-cities average —834.16

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Short of Time?

all the more reason to use only the best...

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CLOW CAST IRON PIPE

Materials Prices

Monthly Market Quotations by ENR Field Reporters

See following ENR issues for OTHER PRICES:

- Clay Products, Lime, Plaster, Paint, Roofing: Last, June 29; Next, July 27.
- Wage Rates, Building Board, Lath, Insulation: Last, June 29; Next, Aug. 3.
- Cement Aggregate, Ready-Mixed Concrete, Asphalt: Last, July 6; Next, Aug. 10.
- Iron & Steel Products Pipe: Last, July 13; Next, Aug. 17.

LUMBER, TIMBER, PLYWOOD— + or — denote this price is higher or lower than last month's price

Item		Unit	Atlanta	Baltimore	Birmingham	Boston	Chicago	Cincinnati	Cleveland	Dallas	Denver	Detroit	Kansas City	Los Angeles	Minneapolis	New Orleans	New York	Philadelphia	Pittsburgh	St. Louis	San Francisco	Seattle	Montreal	Toronto
LUMBER, TIMBER																								
1x6s4s	Pine	Mbf.	+81.00	+83.50	−80.00	......	106.00	91.00	96.00	105.50	......	−109.00	+110.00	......	......	85.00	−94.00b	+103.75	86.00	−84.00	......	......	79.00c	85.00
	Fir		......	+91.00	+102.00	......	+103.00	92.00	......	......	......	−97.00	+110.00	+79.00	−91.75	+91.50	−101.00	......	100.00	+103.00	81.00	60.00	......	......
1x8s4s	Pine	"	+84.00	+86.00	83.00	103.00	107.00	93.00	100.00	105.50	......	−111.00	+110.00	......	......	+87.50	−96.00b	−93.00	86.00	−87.00	......	......	81.00c	−88.00
	Fir		......	+91.00	+97.50	−100.00	+107.00	104.00	......	......	......	−99.00	+110.00	+76.00	−91.75	+91.50	−103.00	......	86.00	+103.00	81.00	65.00	......	......
2x4s4s	Pine	"	+81.00	+86.00	+87.00	+110.00b	+109.00	93.00	97.00	107.50	......	−105.00	+105.00	......	......	−92.50	−97.00b	+114.00	86.00	−93.00	......	......	79.00c	85.00
	Fir		......	+108.50	+120.00	−100.00	+112.00	110.00	111.00	......	103.50	−108.00	+110.00	86.00	−103.50	+113.00	−102.00	+111.00	116.00	107.00	89.00	73.00	......	+105.50
2x6s4s	Pine	"	+82.00	+86.00	−85.00	+110.00b	+109.00	98.00	97.00	107.50	......	−105.00	+110.00	......	......	−92.50	−97.00b	+112.00	88.00	−91.00	......	......	79.00c	−80.00
	Fir		......	+108.50	+119.00	−100.00	+112.00	110.00	111.00	......	103.50	−102.00	+115.00	85.00	−102.50	+112.00	−102.00	+111.00	116.00	+107.00	89.00	73.00	......	+107.50
2x8s4s	Pine	"	+84.00	+91.00	−87.00	+110.00b	114.00	−98.00	−97.00	126.50	......	−115.00	120.00	......	......	+102.50	−97.00b	+114.75	92.00	−92.00	......	......	95.00c	−88.00
	Fir		......	+111.00	+119.00	+115.00	+113.00	−110.00	111.00	......	104.00	−111.50	115.00	85.00	−105.25	+112.00	−102.00	+115.75	116.00	+108.00	89.00	73.00	......	+113.50
2x10s4s	Pine	"	+89.00	+96.00	−93.00	+120.00b	117.00	−105.00	−99.00	126.50	......	−119.00	......	......	......	+102.50	−93.00b	+119.50	95.00	−99.00	......	......	125.00c	−87.00
	Fir		......	+112.50	+122.00	......	118.00	115.00	112.00	......	106.50	−119.00	+120.00	−85.00	+111.75	+113.00	−105.00	+122.50	118.00	113.00	89.00	75.00	......	+116.50
3x12Rgh	Pine	"	+104.00	+111.00	−105.00	......	129.00	112.50	104.00	139.50	......	......	......	......	......	+118.00	115.00b	+130.75	120.00	+125.00	......	......	......	100.00
	Fir		......	+126.00	+133.00	......	+128.00	......	122.00	......	124.50	......	......	91.00	−113.25	+129.00	122.00	+132.75	134.00	−125.00	97.00	87.50	......	+124.50
6x12Rgh	Pine	"	+114.00	+131.00	105.00	......	......	......	......	......	......	......	......	......	......	+118.00	−115.00b	+130.75	120.00	130.00	......	......	......	122.00
	Fir		......	+136.00	+135.00	......	+129.00	......	127.00	......	124.50	......	......	91.00	−121.50	+129.00	−122.00	+130.75	134.00	+132.00	+118.00	91.00	......	+124.50
12x12Rgh	Pine	"	+129.00	+131.00	−120.00	......	......	......	......	......	......	......	......	......	......	−118.00	+120.00b	+126.75	120.00	130.00	......	......	120.00c	120.00
	Fir		......	+136.00	−133.50	......	+129.00	......	124.00	......	119.50	......	......	+91.00	119.50	+129.00	+127.00	+127.75	127.00	+132.00	+119.00	91.00	......	+124.50
FIR PLYWOOD (a)																								
5/8" Int. Plyscored, CD gr.		Msf.	+142.00	−128.00	+131.80	122.00	135.00	+130.45	−127.00	123.00	110.25	128.45	135.00	−101.30	117.00	−122.25	+127.20	+127.50	127.50	+126.37	−105.00	+108.00	119.25	−120.50
3/4" Exterior Plyform, BB gr.		"	+215.00	+218.50	−223.00	216.40	225.00	214.70	−215.00	210.00	210.00	+214.70	215.00	158.10	208.05	−201.95	215.60	+215.60	−215.60	+211.93	188.00	196.00	225.95	+225.00

Fir-Random length, 75% construction grade, 25% standard grade, 30,000 bf, green stock, grademarked. Pine-Random length, #2 common and better, Southern Pine Inspection Bureau grademarked, 30,000 bf. Lumber prices include freight from mill to city and cost of unloading and trucking full carlot to jobsite. •a Certificated stock, carlots, fob city. •b Hemlock, 75% construction grade, 25% standard grade. •c Spruce.

WINDOW GLASS,

Discounts from Jobber's list, Feb. 1, 1950 (a) sales tax extra—single or double strength

	Atlanta	Baltimore	Birmingham	Boston	Chicago	Cincinnati	Cleveland	Dallas	Denver	Detroit	Kansas City	Los Angeles	Minneapolis	New Orleans	New York	Philadelphia	Pittsburgh	St. Louis	San Francisco	Seattle	Montreal	Toronto
A quality	78%	74%b	82%c	70+10% eg	70%	72%	72-2-10%	70%	73%-10	72-10-10%	76-10-10%	$12.88/17.32	70-10%	76%d	79%	80%	76%	74-10-10%ef	60%	$8.85/11.55di	40-10-5%a	$6.49/9.50
B quality	80%d	74%b	83%c	70+10%eg	70%	72%	72-2-10%	70%	73%-10	72-10-10%	76-10-10%	$10.45/14.13	70.10%	76%d	79%	80%	76%	74-10-10%e	73%	6.41/8.07di	40-10-5%a	5.90/8.77

Glass: •a Jobber's list price per box, 14 x 20, ss. $42.75 for A quality, $37.50 for B quality; 14 x 20, ds. $60.00 for A quality, $52.75 for B quality. •b sales tax extra. •c 77% for single strength. •d From 6/15/52 list. •e 77% for double strength. •f Single strength; double strength, 83%. •g From 8/1/58 list. •h ss/ds, 40-in. •i 20 boxes min. •l eff. 10/15/58. •m less 2% disc, 10 days. •n less 1% disc, 10 days. •o add 2% sales tax. •p less 1% for cash. •q less 2% for cash.

EXPLOSIVES

per lb, 40% Ammonia Gelatin in 50 lb cases delivered in 500 lb lots (non-seismograph grades)

Urban Areas	Atlanta	Baltimore	Birmingham	Boston	Chicago	Cincinnati	Cleveland	Dallas	Denver	Detroit	Kansas City	Los Angeles	Minneapolis	New Orleans	New York	Philadelphia	Pittsburgh	St. Louis	San Francisco	Seattle	Montreal	Toronto
	$0.2595	$0.2795	$0.2595	$0.2795	$0.2795	$0.2595	$0.2595	$0.2870	$0.2795	$0.2795	$0.2795	$0.2795	$0.2795	$0.2795	$0.5130g	$0.2795	$0.2595	$0.2795	$0.2795	$0.2795	$23.20h	....

Explosives: Cartridges of 1¼" diameter or over, in standard lengths. •g deliveries in certain areas must be by truck or by truck and boat, requiring extra charge. •h fob Beloeil (near Montreal), per 100 lb., lots under 2000#, wood cases, forcite, 40%. Forcite 60% $24.30 in fiber cases; forcite 40%, $24.05; forcite 60%, $25.80. Price of 60% Ammonia Gelatin is $0.15 per lb. higher than 40% in U. S., $1.75 per 100 lbs. higher in Canada.

Non-Urban Areas	C/L 30,000 lb. lots	10,000 lb. lots	2,000 lb. lots	200 lb. lots
Group 1*	$0.21.95	$0.22.95	$0.26.45	$0.27.95
Group 2†	.22.70	.23.70	.27.20	.28.70

*All areas except those in Group 2 and N.J. cities of Bayonne, Hoboken, Jersey City, No. Bergen, Union City and Weehawken † Florida counties of Manatee, Hardee, Highlands, Okeechobee, St. Lucie and south thereof; Idaho; Maine; Montana; New Mexico counties of Catron, Socorro, Lincoln, De Baca, Roosevelt and south thereof; Texas counties of Bailey, Lamb, Hale, Floyd, Motley, Cottle, Hardeman, Foard, Knox, Haskell, Jones, Taylor, Coleman, McCulloch, San Saba, Burnet, Williamson, Milan Robertson, Leon, Houston, Angelina, Nacogdoches, Shelby and south thereof.

PILES

prices per linear foot, fob cars, New York

Dimensions	Points	Length	By Rail— Pine*§	By Rail— Fir	Dimensions	Points	Length	By Rail— Pine*§	By Rail— Fir
12" at butt	6-in.	30 to 39-ft.	$0.42a	....	14"—2-ft. from butt	6-in.	65 to 69-ft.	1.21	....
12"—2-ft. from butt	6-in.	40 to 44-ft.	.91	....	14"—2-ft. from butt	6-in.	70 to 74-ft.	1.34	$1.40
12"—2-ft. from butt	6-in.	45 to 49-ft.	.97	....	14"—2-ft. from butt	6-in.	75 to 79-ft.	1.41	1.40
12"—2-ft. from butt	6-in.	50 to 54-ft.	1.01	....	14"—2-ft. from butt	5-in.	80 to 84-ft.	1.54	1.45
12"—2-ft. from butt	6-in.	55 to 59-ft.	1.07	....	14"—2-ft. from butt	5-in.	85 to 89-ft.	1.67	1.54

* Pine piling over 90 feet available only in limited quantities. § ASTM Class B •a, trucked in from N. J.
Prices per linear foot, fir and pine, rough peeled, f.o.b. cars, New York. Fir based on Wash. and Ore. points to New York shipping area; pine under fifty feet based on freight from mid/South, over fifty feet on freight from deep south.

RAILWAY TIES

Prices f.o.b. per tie box carload lots:

		6" x 8" x 8' Untr.	6" x 8" x 8' Tr.	7" x 8" x 8'6" Untr.	7" x 8" x 8'6" Tr.
Birmingham*	Hardwood, Grade 3	$1.70	$2.55	Gr. 5 $2.25	$3.33
	Grade 2	1.50	2.35	" 4 2.10	3.18
	Grade 1	1.15	2.00	" 3a 1.70	2.78
Chicago	Red Oak	2.85-3.00	4.00a-4.10	3.90	4.75-5.00
New York	Mixed Hardwood	3.45	5.10	4.30	6.50
	Mixed Oak	3.55	5.20	4.40	6.60
Philadelphia	Mixed Oak	3.80	3.97	4.37	4.57
St. Louis	Mixed Oak	2.65h	3.65h	3.05h	4.10h
San Francisco	Douglas Fir	2.32e	3.75e	2.70ef	3.80ca

Tr.—Treated; Untr.—Untreated. •a Creosoted. •c Empty cell. •e Green •f f.o.b. cars. •g 7 x 9 x 8'6" * Add 75¢/tie freight charge to Birmingham. •h 7" x 9" x 8½. •l Mixed Hardwood

CHEMICALS

Water, sewage treatment, road work, carlots, f.o.b. works

Item	Price
Chlorine cylinders, liquid, per lb. freight allowed, N. Y. State	$ .11
Calcium chloride, 77-80%, flaked, 100-lb. paper bag, ton	32.00
Silicate of soda, 52 deg., in drums, per 100 lb.	2.65
Soda ash, 58%, in paper bags, per 100 lb. dense	1.90
Sulphate of aluminum, commercial, in 100-lb. bags	2.05
Sulphate of copper in bags, 99% per 100 lb., reg., 25.2% copper content	12.50

Construction Reports

Bids Asked—Low Bidders—Contracts Awarded—

NEW ENGLAND

HEAVY CONSTRUCTION—BA

▲† **Me., Bangor**—BA On Or About 8/15—U. S. Eng., 424 Trapelo Rd., Waltham, Mass., COMPOSITE MEDICAL FACILITY, Dow Air Force Base, ENG-19-016-62-4. Approx. $1,500,000. Plans deposit $5.60. CD 8/1/60.

BUILDINGS—LB & CA

▲ **Franchi Constr. Co. Inc.**, 429 Watertown St., **Newton**, Mass., CA **$2,309,659**, est. $2,300,000, GYMNASIUM and SKATING RINK, BURLINGTON, VT. University of Vermont, State Agricultural College, Burlington, Vt. BA 6/15/61. CD 6/19/61, under LB.

▲ **John Bowen Co., Inc.**, 173 Boston St., Dorchester, Mass., CA **$1,333,000**, Proj. PHA Mass-33-1, HOUSING PROJ., Walnut, Morse and Juniper Sts., BROOKLINE, MASS. Brookline Housing Auth., 226 High St., Brookline, Mass. Metcalf & Eddy, Statler Bldg., Boston, Mass., engrs. BA 5/4. CD 5/9/61, under LB.

▲ **Perni Corp.**, 73 Mt. Wayte Ave., Framingham, Mass., CA **$1,797,000** HOSPITAL ADDNS., ALTERATIONS, MALDEN, MASS. Malden Hospital, Hospital Rd., Malden, Mass. BA 6/22. CD 5/25/61.

MIDDLE ATLANTIC

BUILDINGS—BA

▲ **Md., Baltimore**—BA 7/26—City, Bureau Bldg. Contr., 410 Municipal Bldg., Zone 2, structural steel, brick, masonry steel sash Baltimore CIVIC CENTER, Hopkins Pl., Lombard, Howard and Baltimore Sts. $7,000,000. Plans deposit $50. Arthur G. O'Dell, Jr. & Assoc., 109 W. Third St., Charlotte 2, N. C., archts. CD 10/27/58.

▲† **Pa., Phila.**—BA About 8/3—Dist. P. Wks. Office, 4th Naval Dist., 400 units CAPEHART HOUSING, Naval Base, IFB-30891-61B, $6,600,000. Extended date. Bellante & Clauss, Suburban Bldg., 1617 Penn Blvd., Zone 3, archts. CD 6/8/61.

▲ **Pa., Madera**—BA 8/10—Pa. Pub. School Bldg. Authority, 101 South 25th St., Harrisburg, HIGH SCHOOL, Moshannon Valley Jt. School Board, Proj. No. B-1-686, $2,000,000. Plans deposit $50. Heidrich, Kennedy & Risheberger, 750 S. Atherton St., State College, archts. CD 4/17/59, under Moshannon Valley Jt. School Dist., as owner.

HEAVY CONSTRUCTION—LB & CA

▲ **Slattery Contg. Corp.**, 46-36 54 Rd. Maspeth, N. Y., LB **$4,624,321**, (11 bidders), Contr. 161, constr basis ROADWAYS and UTILITIES for Permanent Park Use incl. temporary New York World's Fair 1964-165 constr. Flushing Meadow Park, Queens Boro, FLUSHING, N. Y. Comr. Parks, Arsenal Bldg., Central Park, 64 St. and 5 Ave., New York 1, N. Y. BA 7/6. CD 6/19/61;
Johnson Electrical Corp., 206 E. 29 St., New York 16, N. Y., LB **$2,949,091**, (14 bidders), Contr. 361, UNDERGROUND ELECTRICAL and COMMUNICATION CONDUIT SYS. for Permanent Park Use incl. temporary New York World's Fair 1964-1965 constr. Flushing Meadow Park Queens Boro (New York).

▲ **Baylor Constr. Corp.**, 360 Lexington Ave., New York 17. N. Y. and **Brookfield Constr. Co.**, 521 Fifth Ave., New York 17, N. Y., LB **$6,123,250**, (7 bidders), Contr. 1, structures and equipment Hunts Point POLLUTION CONTROL PROJ. EXTEN., Bronx Boro, NEW YORK, N. Y. Dpt. P. Wks., Rm. 2200, Municipal Bldg., New York 7, N. Y. BA 7/6. CD 6/29/61;
Broadway Maintenance Corp., 22-09 Bridge Plaza N., Long Island City 1, N. Y., LB **$366,770**, (4 bidders), Contr. 2, Electrical work. HUNTS POINT POLLUTION CONTROL PROJ. EXTEN., Bronx Boro (New York, N. Y.).

▲ **A. S. Wikstrom**, Mottville St., Box 217, Skaneateles, N. Y., LB **$3,052,354**, Contr. No. 2, East Side TERMINAL FACILITIES, OSWEGO, N. Y. Port Oswego Auth., W. First St., Oswego, N.Y. BA 7/6. CD 6/6/61.

▲ **R. Zoppo Co., Inc.**, 842 Providence Hy., Norwood, Mass., LB **$1,515,328**, West-side WATER TRANSMISSION MAIN, ROCHESTER, N. Y. Monroe County Water Auth., 339 East Ave., Rochester, N. Y. BA 7/6. CD 6/22/61.

▲ **NEW JERSEY**—State Hy. Dpt., **1035 Parkway Ave.**, Trenton, Bids opened 7/6, ROADS,
Public Constr., Inc., Erial Rd., Blenheim, Blackwood, N. J., LB **$4,037,973**, (4 bidders), grading, paving, 1.667 mi. incl. bridges Rte. 287, Section 3B from New Durham Rd. to Prince St., Middlesex Co. CD 5/29/61

▲ **NEW JERSEY**—State Hy. Dpt., 1035 Parkway Ave., Trenton, Bids opened 7/7, ROADS,
Samuel Braen's Sons of Hawthorne, 121 Getty Ave., Paterson, N. J., LB **$1,659,499** (6 bidders), constr. 1.3 mi. Rte. 208 from Colonial Rd., Franklin Lakes to Rte. 202, Oakland, Bergen Co. CD 5/29/61.

BUILDINGS—LB & CA

▲ **Castagna & Son, Inc.**, 2110 Northern Blvd., Manhasset, N. Y., CA **$2,576,287**, general contract JUNIOR HIGH SCHOOL, AMITYVILLE, N. Y. Bd. Educ., Amityville, N. Y. BA 6/12. CD 5/19/61, under LB.

▲ **86 St. and Second Ave. Holding Corp.**, 44 Court St., Brooklyn, N. Y., Owner Builds, **$7,000,000**, 20 story APARTMENT, GARAGE, 300-34 E. 87 St. at Second Ave., NEW YORK, N. Y. (**Correction—status.**) CD 7/10/61.

▲ **S. S. Silberblatt, Inc.**, 25 W. 45 St., New York 36, N. Y., CA **$10,044,000**, fdns. and general contract Franklin D. Roosevelt HOUSES, Proj. No. NYC-35, E. 6 St., Avenue A, E. 2 St. and 1 Ave., Manhattan Boro, NEW YORK, N. Y. New York City Housing Auth., Rm. 312, 299 Broadway, New York 7, N. Y. BA 6/2; Grand total $13,730,555, CA 6/29; CD 6/6/61, under LB;
Harry Starkman & Bros., 348 Brook Ave., New York 54, N.Y., CA **$1,125,000** heating and ventilating Franklin D. Roosevelt HOUSES, Manhattan Boro (New York, N. Y.);
Spitzer Elec. Co. Inc., 60 W. 18 St., New York 11, N. Y., CA **$1,098,000** electrical work Franklin D. Roosevelt HOUSES, Manhattan Boro (New York, N. Y.);
Jarcho Bros., Inc., 38-18 33 St., Long Island City 6, N. Y., CA **$1,000,513**, plumbing, Franklin D. Roosevelt HOUSES, Manhattan Boro (New York, N. Y.);
Westinghouse Elec. Corp., Elevator Div., 1271 6 Ave., New York 19, N. Y., CA **$551,242**, elevators Franklin D. Roosevelt HOUSES, Manhattan Boro (New York N. Y.).

▲ **Michael Inganamort Constr. Co., Inc.**, 10 Knickerbocker Rd., Dumont, N. J., Owner Builds, **$1,750,000**, 50 HOUSES, Forest Rd., ALLENDALE, N. J. Leonard G. Feinen, 320 Lincoln Ave., Hasbrouck Heights, N. J., archt. CD 2/28/61, under Donnybrook Acres, as owner.

▲ **Ivaldi Development Co.**, 1297-17th St., Palisades Park, N. J., CA **$4,000,000**, 112-unit APARTMENT, Lemoine and Lincoln Avenues, FORT LEE, N. J. Crossbridge Towers, Inc., c/o Isadore Naftali, archt., 312 High St., Newark, N. J.

▲ **Belli Co.**, 2137 Hamilton Ave., Trenton, N. J., CA **$4,770,000**, general contract 14 story OFFICE for State Department of Labor and Industry, TRENTON, N. J. State Division of Purchase & Property, State House, Trenton, Zone 25, N. J. BA 6/15/61. CA 7/6/61. CD 6/20/61, under LB

▲ **Carcaise Constr. Co.**, P.O. Box 29, Rochester, Pa., LB **$2,093,333**, general contract HIGH SCHOOL, for Hopewell-Independence Raccoon Jt. School Bd., ALIQUIPPA, PA. Pa. Pub. School Bldg. Authority, 101 S. 25th St., Harrisburg, Pa. BA 7/6/61. CD 6/7/61.

▲ **Riddle Memorial Hospital, 5 W. Front St., Media,** Pa., rejected bids May 24, Riddle MEMORIAL HOSPITAL, MEDIA, PA. **$2,500,000.** CD 5/18/61.

▲ **Turner Constr. Co.**, 150 E. 42nd St., **New York**, 17, N. Y., CA Est. **$7,800,000**, 7 story HOSPITAL ADDN., Holmes Ave., near Pennypack Circle, PHILA., PA. Nazareth Hospital, Roosevelt Blvd. and Holmes Ave., Phila., Pa. CD 5/16/61.

▲ **Piracci Constr. Co.**, 2552 Woodbrook Ave., Baltimore 17, Md., CA **$5,300,000**, est. $4,000,000. Harlem Park JUNIOR HIGH SCHOOL and Harlem Park ELEMENTARY SCHOOL, BALTIMORE, MD. City, Bureau Bldg. Constr., 410 Municipal Bldg., Baltimore 2, Md. BA 6/21. CD 6/26/61, under LB.

▲ **Hill & Kimmel, Inc.**, 1103 Wayne Ave., Silver Spring, Md., LB **$1,215,000** (3 bidders), OFFICE, 1st and Anson Sts., SILVER SPRING, MD. Operations Research, Inc., 8605 Cameron St., Silver Spring, Md. Ted Englehardt, 933 Gist Ave., Silver Spring, Md., archt. CD 3/30/61.

▲ **William P. Lipscomb Co., Inc.**, Washington Bldg., Wash., D. C., CA **$2,000,000**, EMBASSY, 4200 Linnean Ave. N.W., WASH., D. C. Netherlands Embassy, 1470 Euclid St. N.W., Wash., D. C. CD 12/2/60.

SOUTH

HEAVY CONSTRUCTION—BA

▲ **LOUISIANA**—7/26—Ascension—St. James Bridge and Ferry Auth., Hotel Donaldson, 508 Mississippi St., Donaldsonville, La., BRIDGE,
constr. of all substructure for Sunshine Toll Bridge across Mississippi River at Donaldsonville. Plans deposit $200. Extended date. Palmer & Baker Engineers, Inc., Rm. 309 California Co. Bldg., 1111 Tulane Ave., New Orleans 12, La., 2460 Government Blvd., Mobile, Ala., and 2461 Wisconsin Ave. N.W., Wash., D. C., consult. engrs. CD 6/8/61.

▲ **Tenn., Nashville**—BA 8/8—City Purchasing Agent, City Hall, Contr. No. 9-1, 30 in. by-pass main, main, 36 and 38 in. WATER TRANSMISSION MAIN, Contr. No. 9.2, 48 in. TRANSMISSION MAIN, Contr. No. 9.3, 48 in. TRANSMISSION MAIN. Plans deposit $50. Chester Engineers, 601 Suismon St., Pittsburgh 12, Pa., engrs. CD 2/24/59.

BUILDINGS—BA

▲ **Ky., Bowling Green**—BA 7/26—Commonwealth Ky., Div. Purchases, 327 Capitol Annex Office, Frankfort, 6 story, brick Women's DORMITORY, Western State College. $1,236,000. Plans deposit $50. Walter Scott Roberts & Assoc., 115 East 4 St., Owensboro, archts. Charles Wade, Center and Dave Sts., Madisonville, engr. CD 1/5/61.

HEAVY CONSTRUCTION—LB & CA

▲ **VIRGINIA**—State Dpt. Hys., 1221 East Broad St., Richmond, ROADS,
Va.—**Pendleton Constr. Corp.**, Box 549, Wytheville, Va., CA **$1,478,276**, grading, paving and bridge work on 2.56 mi. Interstate 81, Smyth Co.;
Va.—**J. R. Ford Co., Inc.**, 19th and Fillmore, Lynchburg, Va., CA **$609,896**, dividing US Rte. 58 from Franklin to near Nottoway Swamp bridge, Southampton Co.;
Va.—**Echols Bros., Inc.**, Drawer 869, Staunton, Va., CA **$812,484**, 6.7 mi. parallel road to divide US Rte. 360 from new Pamunkey River bridge to 5.3 mi. east of Mechanicsville, Hanover Co. Grand total **$2,900,656.** BA 6/28/61. CD 7/7/61, under LB.

▲ **LOUISIANA**—Ascension-St. James Bridge and Ferry Auth., Hotel Donaldson, 508 Mississippi St., Donaldsonville, Bids opened 7/7, BRIDGE,
American Bridge Div., United States Steel Corp., 655 M and M Bldg., Houston, Tex., LB **$12,900,000** superstructure Sunshine Toll Bridge, Mississippi River. CD 6/8/61.

BUILDINGS—LB & CA

▲ **John W. Daniel & Co. Inc., P.O. Box 1628, Danville,** Va., CA **$2,509,000**, 3 story, bsmnt., approx. 110,000 sq. ft. steel, masonry LIFE SCIENCE BLDG. with air-conditioning, University of Virginia, CHARLOTTESVILLE, VA. State Dpt. Educ., State Office Bldg., Richmond, Va. BA 6/1/61. CA 6/30/61. CD 6/6/61, under LB.

▲ **Chester Mabry Constr. Co.**, 202 North Oregon, Tampa, Fla., CA **$1,700,000**, William G. Pierce Junior HIGH SCHOOL, 5511 Hesperides, James Buchanan Jr. HIGH SCHOOL, Bearss Ave. and North Blvd., TAMPA, FLA. Hillsboro County Bd. Public Instruction, County Courthouse, Tampa, Fla. BA 5/16/61. CD 5/31/61.

▲ **Taylor Constr. Co.**, 7100 Biscayne Blvd., Tampa, Fla., CA **$2,000,000**, 200-unit HOTEL, Cass and Marion Sts., TAMPA, FLA. Heart of Tampa Hotel, Inc., c/o Carlos P. Schoeppl, archt., 4400 Post Ave., Miami Beach, Fla. Oboler & Clarke, 927 Arthur Godfrey Rd., Miami Beach, Fla., engrs. CD 7/28/60.

▲ **Keller Constr. Co.**, Box 439, New Orleans, La., LB **$2,757,000**, WAREHOUSE, OFFICE and 2 SERVICE BLDGS., NEW ORLEANS, LA. National Tea Co., 1000 N. Broad St., Chicago, Ill. BA 6/29. CD 6/16/61.

▲ **Johnson, Drake & Piper**, P.O. Box 12025, Atlanta, Ga., LB **$1,489,760**, est. $1,141,000, (7 bidders), ADMINISTRATION BLDG. for Industrial Research located on Spindletop Farm, University of Kentucky,

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PROJECTS COVERED

By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $53,000; other public works $88,000; Industrial buildings $110,000; other buildings $400,000. Also Foreign projects of $1,000,000 and more in size of Interest to American contractors.

By Regions & Classes of Construction

(In order of Listing)

BIDS ASKED
LOW BIDDERS
CONTRACTS AWARDED
New England
Middle Atlantic
South
Middle West
West of Mississippi
Far West

PROPOSED WORK
Water Supply
Sewers, Waste Disposal
Bridges
Streets & Roads
Earthwork, Waterways
Public Buildings
Mass Housing
Commercial Buildings
Industrial Buildings
Unclassified

In These Stages

PROPOSED WORK: Before and including appointment of engineers or architects.
BIDS ASKED: BA (new announcements only). For full calendar, see also preceding issues.

SOON LETS CONTRACT: SLC

LOW BIDDERS: LB On jobs below $500,000 in value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: CA Except awards to low bidders previously reported n low bidder stage.

CD dates shown are of Construction Daily Issue in which last previous report was published.
OWNERS, ENGINEERS, ARCHITECTS, CONTRACTORS are invited to report their new jobs for listing in these reports when they meet or exceed the size minimums shown above. Address these news releases to J. A. Mahoney, **REPORTS, ENGINEERING NEWS-RECORD, 330 W. 42 St., New York 36, N. Y.**

Symbols and Abbreviations Include:

†	Federal Government
▲	Project of $1,000,000 or over.
ENR	Engineering News-Record
CD	Construction Daily

For additional reports see Construction Daily.

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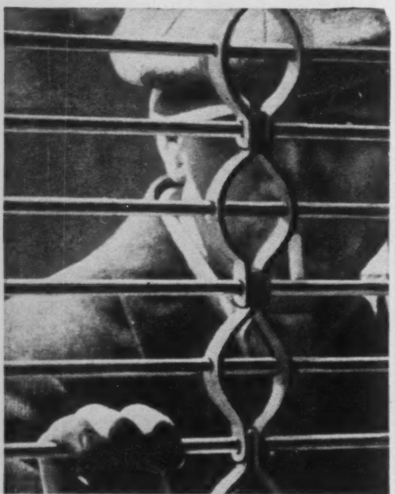

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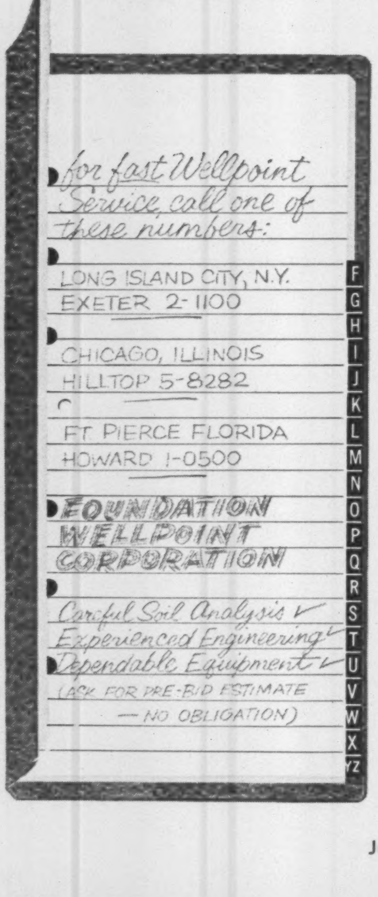

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LEXINGTON, KY. Commonwealth of Ky., Div. Purchases, Frankfort, Ky. BA 7/7. CD 6/12/61.

MIDDLE WEST

BUILDINGS—BA

▲ **Wis., Janesville**—BA 9/6—Rock County, Courthouse, NURSING HOME. $2,000,000. Plans deposit $100. Carl Lloyd Ames & Assocs., 7124 West Center St., Milwaukee, archts. CD 8/5/60.

HEAVY CONSTRUCTION—LB & CA

▲ **Hunkin Conkey Constr. Co.,** 1740 E. 12th St., Cleveland 14, O., LB **$1,777,000,** est. $1,750,000, (8 bidders), first phase EXCAVATION, FOUNDATION, WALLS, PILING, DRAINAGE, for MALL EXHIBITION HALL, CLEVELAND, O. City, City Hall, Cleveland 14, O. BA 7/6/61 CD 6/12/61.

BUILDINGS—LB & CA

▲ **R. H. Bowers Constr. Co.,** 6645 Whitcomb Pl., Dayton 59, O., Owner Builds., **$4,000,000,** $1,000,000 first year (3 to 4 year program), 180 HOMES, Hyde Park, Marshall Rd., CENTERVILLE, O.

▲ **Frank Messer & Sons, Inc.,** Paddock Rd., Cincinnati, O., CA **$4,227,800,** HI RISE APARTMENTS, Linn St., CINCINNATI, O. Cincinnati Metropolitan Housing Auth., 595 Armory Ave., Cincinnati, O. BA 6/22/61. CA 7/5/61. CD 6/27/61, under LB.

▲ **Restifo's Inc.,** 1412 Forest Hills Blvd., Cleveland 18, O., Owner Builds, **$1,400,000,** $700,000 first year, (2 year program) 40 HOMES, W. 228th and W. 229th Sts., Parkview, CLEVELAND, O.

▲ **Columbus Motel Corp.,** c/o W. B. Gibson, 200 Chestnut St. NE, Warren, O., Owner Builds, **$1,500,000,** Howard Johnson MOTOR LODGE, swimming pool, corner Rtes. 71 and 161, COLUMBUS, O. Philip Wasserstrom, Chester-12th Bldg., Cleveland 14, O., archt.

▲ **Frank Messer & Sons, Inc.,** 4612 Paddock Rd., Cincinnati, O., CA Est. **$3,200,000,** 11 story MOTOR HOTEL, Stratford House Motor Hotel, outdoor pool, 200 car parking, 330-334 W. 1st St., DAYTON, O. Stratford House, Inc., c/o Sol Friedman, 225 W. 1st St., Dayton, O. Richard D. Levin, 1957 Burbank Dr., Dayton 6, O., archt. CD 3/23/61.

▲ **Lorrich Constr. Co.,** 5570 Meister Rd., Mentor, O., Owner Builds, **$1,725,000,** $500,000 1st year (3 year program) 96 HOMES, Lake Erie Estates, MENTOR, O.

▲ **Lorrich Constr. Co.,** 5570 Meiste Rd., Mentor, O., Owner Builds, **$1,725,000,** $500,000 first year (3 to 4 year program). 69 HOMES, Lorrey Village MENTOR, O.

▲ **George J. Goudreau,** 9801 Brookpark Rd., Cleveland, O., Owner Builds, **$3,800,000,** eighteen Ranch Village APARTMENTS, Big Creek Parkway, Metropolitan Park, PARMA HEIGHTS, O.

▲ **Donelson Builders, Inc.,** 1155 E. Broad St., Columbus, O., CA Est. **$8,000,000,** RESORT COMMUNITY, incl. resort homes, club house, golf course, lakes, hunting preserve, stables, air-landing strip, shopping on 1,000 acre site along Twp. Rd. 63, off Rte. 33, SUGAR GROVE, O. Hide-a-Way Hills Co., c/o Forrest M. Donelson, Jr., 1155 E. Broad St., Columbus, O. Titus & Prindle, 556 S. Drexel St., Columbus, O., archt.

▲ **Miller Builders, Inc.,** 920 S. Owen St., Mt. Prospect, Ill., Owner Builds, **$20,000,000,** HOMES, Wilke, Palatine and Rand Rds., ARLINGTON HEIGHTS, ILL. Rich M Dodge Assocs., Inc., 7914 Lincoln St., Skokie, Ill., archt.

▲ **Pacesetter Homes, Inc.,** 1000 E. 162nd St., South Holland, Ill., Owner Builds, **$2,000,000,** SHOPPING CENTER, 183rd St., Kedzie Ave., Homewood, CHICAGO, ILL.

▲ **Humzinger Constr. Co.,** 4577 N. 124th St., Milwaukee, Wis., CA Est. $3,582,000, 1 story, 410 x 444 ft., rein.-con. SERVICE CENTER, Glendale, MILWAUKEE, WIS. Milwaukee Gas Light Co., 626 E. Wisconsin Ave., Milwaukee, Wis. Ford, Bacon & Davis, Inc., 2 Broadway, New York, N. Y., engr. CD 8/24/60.

▲ **D. Oudenhoven Constr. Co.,** Blackwell St., Kaukauna, Wis., LB **$1,648,000** (5 bidders), general contract INFIRMARY, WINNEBAGO, WIS. State Dpt. P. Welfare, Capitol Bldg., Madison, Wis. BA 6/29/61. CD 6/20/61.

MISSISSIPPI TO ROCKIES

HEAVY CONSTRUCTION—BA

▲ **Oklahoma**—BA 8/15—Grand River Dam Auth., Vinita, four 37,500 hp. HYDRAULIC TURBINES, Markhams Ferry Dam, $3,900,000. W. R. Holway & Assocs., 1850 S. Boulder St., Tulsa, engr.

▲† **Texas**—BA 8/18—International Boundary & Water Comn., Mart Building, 206 San Francisco St., El Paso, T&NO RAILROAD RELOCATION for Amistad Dam, Rio Grande International Dams Project, Val Verde Co., Inv. No. UDA-6457. Extended date. CD 7/6/61.

BUILDINGS—BA

▲ **Colo., Colorado Springs**—BA 7/30—School Dist. No. 12, 1201 W. Cheyenne Blvd., 1 story, 80,000 sq. ft. HIGH SCHOOL, Skyway Park. $1,400,000. Lusk & Wallace, 121 W. Vermijo Ave., archts. CD 6/6/60.

▲ **Minn., St. Cloud**—BA 8/9—State College Bd., 437 Centennial Bldg., St. Paul, Zone 1, DORMITORY and

FOOD SERVICE FACILITIES (2 bldgs.). $1,222,000. Plans deposit $50. F. W. Jackson & Assocs., Box 536, archts. CD 12/1/59.

▲ **Minn., Minneapolis**—BA 8/15—Minneapolis Housing & Redevelopment Auth., 215 Public Health Center Bldg., HOUSING for the ELDERLY, incl. two 12 story towers, 87 units, Site No. 11 between 8 and 9 Sts. from 12 Ave. S. to 13 Ave. S. $1,760,000. Thorsen & Thorshov, Inc., 1009 Marquette Ave. archt. CD 1/11/61.

HEAVY CONSTRUCTION—LB & CA

▲ **MISSOURI**—State Hy. Dpt., Jefferson City, Bids opened 6/30, ROADS,
Mo.—**Howard Constr. Co. and Marvin & Olen Howard,** Sedalia, Mo., LB **$2,393,859,** (6 bidders), 2-24 ft. concrete pavts. 3.348 mi. Proj. U-898(7), Buchanan Co.; LB **$663,628,** (6 bidders), gr., culverts, 2-24 ft. conc. pavts. Interchange with Proj. Rte. 36. Proj. I-IG-29-2(30), Buchanan Co.;
Mo.—**Porter-DeWitt Constr. Co., Inc.,** P.O. Box 279, Popar Bluff, Mo., LB **$2,339,520,** (8 bidders), gr., culv., 2-24 ft. conc. pavts. 4.564 mi., Proj. I-44-2 (37), 157, Pulaski Co.;
Mo.—**J. S. Alberici Constr. Co., Inc.,** 1550 Irving, St. Louis 20, Mo., LB **$854,062,** (4 bidders), gr., culvt., conc. pavt. 1.875 mi. Proj. US-1870(2), St. Louis Co. CD 6/7/61.

▲† **Westinghouse Electrical Corp.,** Commonwealth Bldg., Wash., D. C., CA **$2,647,983,** installation four GENERATORS, Dardanelle Dam, 32,642 kga generators, ARKANSAS. U. S. Eng., P.O. Box 867, Little Rock, Ark. CD 9/20/60.

▲† **Paul Hardeman, Inc.,** 10579 Dale Ave., Stanton, Calif., and **Fischbach & Moore,** Box 7728, Dallas, Tex., LB **$36,637,470,** (4 bidders), Phase II of Titan II MISSILE LAUNCH FACILITIES, 18 sites, in Central Arkansas, incl. plumbing, electrical work, interior walls, etc., near Little Rock Air Force Base, ENG-04-548-61-42, LITTLE ROCK, ARK. U. S. Eng. Ballistic Missile Constr. Office, Air Force Unit Postoffice, Los Angeles 45, Calif. BA 6/29/61. CD 5/26/61.

▲ **COLORADO**—State Hy. Dpt., 4201 East Arkansas Ave., Denver, ROAD,
Platte Valey Constr. Co., 900 S. Adams St., Box 595, Grand Island, Neb., LB **$1,340,151,** est. $1,384,000, (9 bidders), grading, structures, 9.611 mi. Interstate Rte. 80S between Fort Morgan and Brush, Proj. I-80S-1(25)78, Morgan Co., BA 7/6/61. CD 6/20/61.

▲† **Colorado Constructors & A. S. Horner Constr. Co., Inc.,** 725 W. 39th St., Denver, Colo., CA **$5,820,807,** Lemon Dam and ROAD RELOCATION, Florida Project, DC-5575, COLORADO. Bureau Reclamation, Dpt. Interior, Durango, Colo. BA 6/1/61. CD 6/6/61, under LB.

BUILDINGS—LB & CA

▲ **M. H. Anderson Constr. Co.,** 8901 Lyndale Ave. S., Minneapolis, Minn., Owner Builds, **$5,000,000,** Northwood Terrace HOUSING PROJ., 36 Ave. between Winnetka Ave. and County Rd. 18, NEW HOPE (P.O. MINNEAPOLIS), MINN.

▲ **E. M. Ganley Co., Inc.,** 2900 Oakland Ave., Minneapolis, Minn., CA Est. **$3,000,000,** DISTRIBUTION CENTER, WAREHOUSE and OFFICE, Hy. 55 and County Rd. 6, PLYMOUTH, MINN. Gold Bond Stamp Co., 1629 Hennepin Ave., Minneapolis, Minn. CD 6/30/61.

▲ **J. S. Sweitzer & Son, Inc.,** 777 Raymond Ave., St. Paul, Minn., CA **$2,371,068,** Harding HIGH SCHOOL, ST. PAUL, MINN. Bd. Educ. Special School Dist. No. 2, City Hall and Court House, St. Paul, Minn. BA 6/27. CA 7/6. CD 6/30/61, under LB;
Pierre Aircon Co., 1322 Rice St., St. Paul, Minn., CA **$669,100,** mechanical work Harding HIGH SCHOOL (St. Paul, Minn.).

▲ **Winrock Enterprises,** 207 W. Second St., Little Rock, Ark., Owner Builds, **$4,000,000,** 457 HOUSES in Richland Subdivision east of municipal airport, LITTLE ROCK, ARK. CD 1/16/61.

▲ **Olson Constr. Co.,** 410 S. 7th. St., Lincoln, Neb., CA Est. **$1,000,000,** 150 x 500 ft. BOILER MFG. PLANT, and 4,000 sq. ft. OFFICE SECTION, 70th St. and Hy. No. 6, LINCOLN, NEB. Nebraska Boiler Co., Inc., 235 N. 9th. St., Lincoln, Neb.

▲ **E. A. Cowen Constr. Co.,** 214 N. Broadway, Shawnee, Okla. CA **$1,431,358,** est. $1,500,000, Eisenhower JUNIOR HIGH SCHOOL, LAWTON, OKLA. Bd. Educ., 9th and C Sts., Lawton, Okla. Noftsger & Lawrence & Assocs., 2756 NW 23rd St., Oklahoma City, Okla., archts. CA 7/3/61. CD 4/6/61.

▲ **Linde Div., Union Carbide Corp.,** 270 Park Ave., New York, N. Y., Owner Builds, 100 liters per hour liquid helium PLANT, AMARILLO, TEX. CD 4/18/61.

▲ **Baxter Constr. Co.,** P.O. Box 7744, Houston, Tex., LB **$1,783,000,** est. $1,000,000, (10 bidders), 5-level, 500-car PARKING GARAGE, HOUSTON, TEX. Texas Medical Center (St. Luke's Methodist, and Texas Childrens' Hospitals) 1133 M.D. Anderson Blvd., Houston, Tex. BA 6/20/61. CD 6/8/61.

▲ **Danna Constr. Co.,** 5526 Dyer St., Dallas, Tex., Owner Builds, **$2,250,000,** $750,000, 1st year, (two years to complete), 183 DWELLINGS, MESQUITE, TEX. CD 6/21/61.

▲ **Quincy Lee & Cliff Martin,** Bludau-Bishop Rd., San Antonio, Tex., Owner Builds, **$3,640,000,** $1,000-000 1st year, three years to complete, 260 DWELLINGS, Red Horse Ridge Subdivision, SAN ANTONIO, TEX. Guy Shown, Bludau-Bishop Rd., San Anonio, Tex., archt.-engr.

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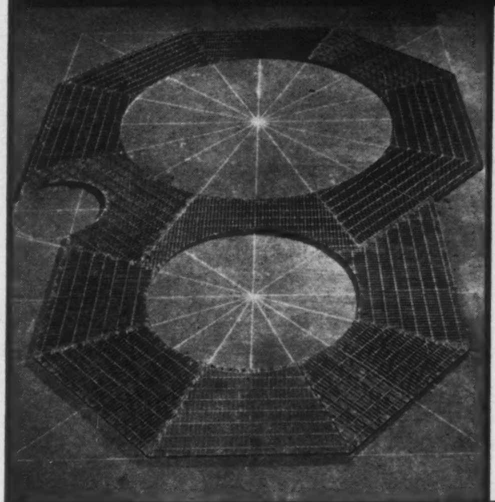

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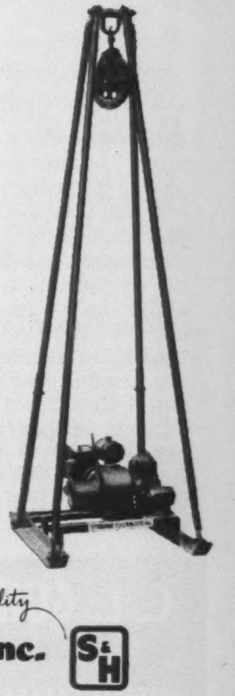

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FAR WEST

BUILDINGS—BA

▲ **Calif., Newport Beach**—BA 7/27—Newport Union High School Dist., 1601 16 St., HIGH SCHOOL (8 bldgs), Jamboree and Ford Sts., Corona Del Mar. $3,400,000. Extended date. Blurock, Ellerbroek & Assoc., 2515 E. Coast Hy., Corona Del Mar, archts. CD 7/6/61.

▲ **Wash., Seattle**—BA 7/27—Shoreline School Dist. 412 E. 158th St. and 15th Ave. NE, five 81,587 sq. ft. frame masonry JUNIOR HIGH SCHOOL BLDGS. $1,200,000. Plans deposit $50. Steinhart, Theriault & Anderson, 1264 Eastlake Ave. E., archts. CD 6/23/61.

▲ **Calif., Hayward**—BA 8/8—State Div. Architecture, 1120 N St., Sacramento, 3 story, 107,000 sq. ft. rein.-con. FINE ARTS BLDG., Alameda County State College. W.O. 4554GC-28. $2,300,000. Plans deposit $100. CD 11/1/60.

▲ **Calif., Hayward**—8/15—State Div., Architecture, 1120 N St., Sacramento, 3 story, bsmnt. 203,600 sq. ft. rein.-con. SCIENCE (2 bldgs.), connected by covered passage, Alameda County State College, W.O. 4554GC-59. $5,000,000. Plans deposit $100. CD 11/1/60.

▲ **Calif., Fullerton**—BA 8/16—State Div. Architecture 107 South Broadway, Los Angeles, 6 story, bsmnt., penthouses, 310,000 sq. ft. rein.-con. SCIENCE and CLASSROOM incl. boiler plant wing, Orange County State College. W.O. 4414GC-20. $7,400,000. Plans deposit $100.

▲ **Hawaii, Kailua**—BA 9/7—Windward Oahu Community Assoc., Kailua, Oahu, Castle Memorial HOSPITAL. $1,-500,000.Lemmon Freeth, Haines & Jones c/o 1410 Kapiolani, Honolulu, Hawaii, archts. Charles Luckman & Assocs., c/o 1410 Kapiolani Blvd., Honolulu, Hawaii, engrs. CD 3/7/61.

HEAVY CONSTRUCTION—LB & CA

▲ **UTAH**—State Rd. Comn., Utah State Office Bldg., Salt Lake City, Zone 14, Bids opened 7/7, ROADS

Utah—Fife Constr. Co., Box 363, Brigham City, Utah, LB **$190,788**, est $191,934, (5 bidders), 3½ in. plant mix surf. on U.S. 91 from Perry to Willard, four mi., Box Elder Co., CD 6/29/61; LB **$368,124**, est. $375,041, (5 bidders), 6.273 mi. plant mix. bit., Davis and Weber Counties, CD 6/19/61;

Utah—Gibbons & Reed Co., 825 W. 9th North, Salt Lake City, Zone 16, Utah, LB **$3,589,719**, est. $4,000,000, (6 bidders), 1.671 mi. Interstate Hy. No. 15 from 8th South to 18th South, Salt Lake City, Utah Co., CD 6/14/61.

C. L. GUILD CONSTRUCTION CO., INC.

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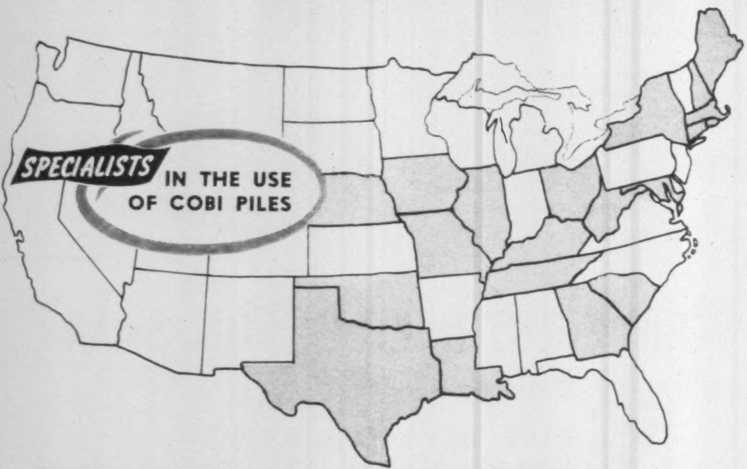

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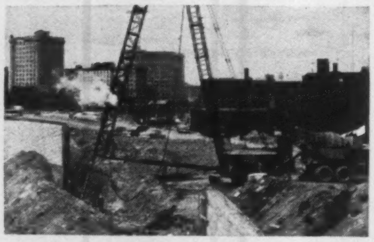

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SYRACUSE, N. Y. ATLANTA, GA. KANSAS CITY, MO.

▲† **Gibbons & Reed Co.**, Box 2429, Salt Lake City, Zone 10, Utah, CA **$3,138,415**, est. $2,899,095, (4 bidders), Pumping Plant, INTAKE CHANNEL, Weber Basin Project, Willard Canal, Ogden, Box Elder and Weber Counties, DC 5576, UTAH. Bureau Reclamation, Dpt. Interior, Ogden, Utah. BA 6/6/61. CA 7/3/61. CD 6/9/61, under LB.

▲ **CALIFORNIA**—State Div. Hys., 120 South Spring St., Los Angeles, ROAD,

Peter Kiewit Sons' Co., 345 Kieways Ave., Arcadia, Calif., CA **$4,315,900**, grading, paving 2 mi. 8 lane divided freeway on San Diego Freeway between Hawthorne Blvd. in Lawndale and 135 St. in Hawthorne, Los Angeles Co. BA 6/22. CD 6/27/61, under LB.

▲† **Charles J. Rounds Co.**, 16510 Gladstone Ave., Azusa, Calif., CA **$2,956,000**, IMPRVT. Centinela Creek CHANNEL, Jefferson Blvd. to Ballona Creek, Los Angeles and Culvert City, CIVENG-04-353-61-23, CALIFORNIA. U.S. Eng., 751 Figueroa St., Los Angeles, Calif. BA 5/23. (**Correction**—contractors' name.) CD 6/1/61, under CA.

▲ **Gibbons & Reed Co.**, 825 West 9th North St., Salt Lake City, Utah, CA **$2,028,435**, Gerle Creek Diversion and Robbs TUNNEL Forebay DAMS and 9,000 ft. connecting CANAL, Upper American River Proj., SACRAMENTO, CALIF. Sacramento Municipal Utility Dist., 6201 S St., Sacramento, Calif. BA 6/29. CA 7/6 CD 7/6/61, under LB.

▲ **Fred J. Early Co.**, P. O. Box 114, Torrance, Calif., LB **$5,575,000**, PUMP STATIONS Nos. 1 & 2, Metropolitan Sewer Proj., SAN DIEGO, CALIF. City, Purchasing Agent, Rm. 161, Civic Center Bldg., San Diego 1, Calif. BA 7/6. CD 6/1/61.

BUILDINGS—LB & CA

▲ **C & R Builders, Inc.**, 1619 8 Ave. N., Seattle, Wash., CA **$1,750,000**, 1 story, masonry, steel Central JUNIOR HIGH SCHOOL, ANCHORAGE, ALASKA. Bd. Educ. Independent School Dist., 1602 Hillcrest Dr., Anchorage, Alaska. BA 6/20. CD 6/22/61, under LB.

▲ **Selkirk Co.**, 1508 S. Chestnut St., Spokane, Wash., CA **$1,561,267**, nine 1 story, 202,000 sq. ft. HIGH SCHOOL Bldgs., SPOKANE, WASH. School Dist. No. 1, W. 5034th St., Spokane, Wash. BA 6/21/61. CD 6/28/61, under LB.

James Smyth Plumbing & Heating Co., N. 216 Division St., CA **$552,249**, mechanical contract for HIGH SCHOOL, (Spokane, Wash.)

▲ **Midwest Piping Div. of Crane Co.**, 1450 S. 2nd St., St. Louis 4, Mo., CA **$5,000,000** fabrication and erection PIPING incl. furnishing valves and hangers for turbines and two boilers for Units 3 and 4 of Morro Bay Power Plant, CALIFORNIA. Pacific Gas & Electric Co., 245 Market St., San Francisco 6, Calif.

▲ **Robert A. McKee**, 4700 San Fernando Rd. West, Los Angeles, Calif., CA **$5,250,000**, BANK ADDN., Spring and Main Sts., LOS ANGELES, CALIF. Bank of America, 7th and Spring Sts., LOS ANGELES, CALIF. Stiles & Robert Clements, 830 Wilshire Blvd., Los Angeles, Calif., archts.

▲ **S. Patti Constr. Co.**, 1340 Admiral Blvd., Kansas City, Mo., LB **$3,560,000**, 6 story, rein.-con. PHYSICS BLDG., Unit No. 2, LOS ANGELES, CALIF. University of California at Los Angeles, 405 Hilgard Ave., Los Angeles, Calif. BA 7/7. CD 5/3/61.

▲ **Simpson Constr. Co.**, Box 330, Van Nuys, Calif., CA PLANT and RESEARCH LABORATORIES, Rancho Conejo Industrial Area, NEWBURY PARK, CALIF. Radioplane Div. of Northrop Corp., 8000 Woodly, Van Nuys, Calif. Albert C. Martin & Assoc., 333 South Beavory Ave., Los Angeles 17, Calif., archts.

▲ **Gordon H. Ball**, 300 Camille Ave., **Danville, Calif.**, CA **$2,156,500**, Sam Brannan JUNIOR HIGH SCHOOL, Elmer Way, SACRAMENTO, CALIF. Sacramento City Unified School Dist., 1619 N St., Sacramento, Calif. CD 6/29/61, under LB.

▲ **Pardee Bldg. Corp.**, 10639 Santa Monica Blvd., Los Angeles 25, Calif., CA **$1,305,305**, 133 RESIDENCES, Lots 1-133 Clairemont Manor South, Unit No. 1, SAN DIEGO, CALIF. Longford Bldg. Co., 10639 Santa Monica Blvd., Los Angeles 25, Calif.

CANADA

BUILDINGS—BA

▲ **Ont., Toronto**—BA 8/2—Dpt. P. Wks., Parliament Bldgs. VOCATIONAL TRAINING INSTITUTE WING, Ryerson Institute of Technology. $6,000,000. Plans deposit $750. S. B. Coon & Son, 745 Mt. Pleasant Rd. CD 7/7/61, under Ryerson Institute of Technology, as owner.

▲ **Sask., Regina**—BA 8/9—Saskatchewan Power Corp., 1739 Cornwall St., Second Phase, 13 story, brick, steel HEAD OFFICE, Victoria St., Total est. $6,-000,000. Joseph Pettich, 908 McCallum Hill Bldg., Regina, archt. CD 12/20/56.

BUILDINGS—LB & CA

▲ **M. Sullivan & Son Ltd.**, Elgin St., Arnprior, Ont., CA **$1,434,000**, structural steel, brick ARTS BLDG. and LECTURE CENTRE, rein.-con. fdn., OTTAWA, ONT. Carleton University, 268 1st Ave., Ottawa, Ont. BA 6/22/61. CD 7/5/61, under LB.

V. K. Mason Constr. Ltd., 739 Richmond Rd., Ottawa, Ont., CA **$1,788,000**, structural steel, brick, two RESIDENCES, EATING CENTER, rein.-con. fdn. (Ottawa, Ont.).

▲ **Louis Donolo, Inc.**, 8320 St. Lawrence Blvd., Montreal, Que., CA **$3,500,000**, 11 story, concrete re[illegible] con. frame, air conditioned EAST WING APARTMENT EXTENSION, MONTREAL, QUE. The Forty-Three Hundred, 4300 Western Ave., Westmount, Que. BA 6/15/61. CD 5/31/61.

▲ **Managers Ltd.**, Woolworth Bldg., Water St., St. John's Newfoundland, CA Est. **$3,000,000**, 13 story, 59 x 296 ft., rein.-con., steel, Pelly's brick NURSES RESIDENCE, TRAINING SCHOOL, ST. JOHN's, NEWFOUNDLAND, Dpt. P. Wks., Parliament Bldgs., St. John's Newfoundland. CD 2/14/61, under Providence of Newfoundland, Parliament Bldgs., as owner.

PUERTO RICO

BUILDINGS—LB & CA

▲ **Farnsworth & Co., Inc.**, 1515 S. Salcedo, New Orleans, La., U.S.A., and San Juan, Puerto Rico, LB Approx. **$2,500,000**, (4 bidders), RETAIL STORE and WAREHOUSE, Avenida Lius Munoz and Calle Coll Y Toste (Hato Rey), Public Rd. 176, SAN JUAN, PUERTO RICO. Sears, Roebuck & Co., c/o Weed-Johnson Assocs., archts., 550 Brickell Ave., Miami, Fla., U.S.A. BA 7/3. CD 6/22/61.

AMERICANS ABROAD

BUILDINGS—LB & CA

▲ **Lurgi Gesselschaft Fur Mineraloltechnik M.B.H.**, Frankfurt, West Germany, CA Est. **$10,000,000**, design and construct 14,000 ton capacity PARA-XYLENE PLANT, DINSLAKEN, WEST GERMANY. Standard Oil Co. of California, 30 Rockefeller Plaza, New York 19, N. Y., U.S.A., and British Petroleum Co. Ltd., London, England. Completion mid-1962.

FOREIGN

HEAVY CONSTRUCTION—BA

Hong Kong—BA 9/1—Secretary of Tender Bd., Colonial Secretariat, Central Govt. Offices, Lower Albert Rd., Hong Kong, TUNNELS between Tai Po Tau and Pai Tau Hang consisting 8 mi. tunnelling up to 22 ft. diam., shafts and stream intakes, Plover Cove and Heb Haven Scheme (P. W. D. Cont. No. 101 of 1961). Forms of Tender, specifications and further particulars may be obtained from offices of consulting engineers on deposit of cheque for H. K. $400 or £25 refundable. Binnie, Deacon & Gourley, Artillery House, Artillery Row, Westminister, London, S. W. 1, England and Scott & Wilson, Kirkpatrick & Partners, Manson House, Nathan Rd. Hong Kong, consult. engrs.

United Arab Republic—BA 9/9—General Manager Eqyptian Railways, Cairo Sta., Cairo, Egypt, steel double-line RAILWAY BRIDGE over Nile at Benha, Egyptian Region. Plans deposit $86.10. (Bide must be submitted through an agent established in the United Arab Republic).

Iraq, Baghdad—BA 9/30—Dir. General of Planning Design, Ministry of Municipalities, Baghdad, WATER SYS., PUMP HOUSE at Tal-Keef. Plans deposit $28.

PROPOSED PROJECTS

WATER SUPPLY

▲ **Colo., Littleton**—Cherry Creek Valley Water & Sanitation Dist., 2000 S. Dayton, voted **$2,000,000** bonds June 26, WATER SUPPLY LINE, booster station, distribution station, near Denver, Ripple & Howe, Inc., 2747 Zuni, Denver, Colo. consult. engr. CD 6/7/61.

▲ **O., Xenia**—Bd. Comrs. Greene Co., Courthouse, WATER and SEWER SERVICES, Wright View Heights, Fairborn, **$1,380,000**. Fred Lemcke, co. engr.

SEWERS, WASTE DISPOSAL

▲ **Fla., Gainesville**—City, City Hall, 50 mi. SANITARY SEWER LINES. **$3,568,000. David B. Smith**, 716 East University Ave., consult. engr.

AIRPORTS

▲ **O., Cleveland**—City, City Hall, Zone 14, bond election Nov. 7, Cleveland Hopkins and Burke AIRPORT IMPRVS. **$4,000,000**. CD 3/14/52.

PUBLIC BUILDINGS

▲ **Ala., Mobile**—Mobile Housing Bd. City. City Hall, plans by Harry Inge Johnstone, Annex 1st National Bank Bldg., 474 units low rent HOUSING, N. Beauregard St. and S. of One Mile Creek, **$7,712,942**. CD 4/1/59.

▲ **Calif., Los Angeles**—University of California at Los Angeles, 405 Hilgard Ave., plans by Ardian Wilson & Assoc., 816 W. 5 St., 6 story, rein.-con. LIFE SCIENCES, University of California. **$1,500,000**. CD 7/21/55.

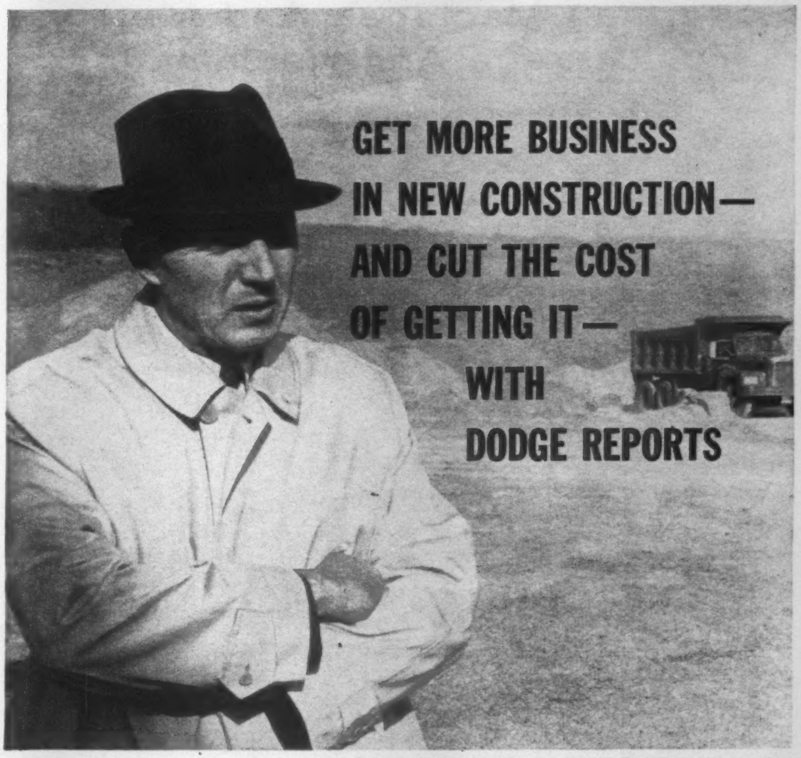
▲ **Conn., Bristol**—City, City Hall, MUNICIPAL BLDG. **$1,629,815**. To go ahead 1962.

▲ **Ga., Atlanta**—Atlanta Housing Auth., 824 Hurt Bldg., Atlanta, plans by William & Millkey, 761 Peachtree St. NE Proj. GA 6-13, 11 story APARTMENT, **$3,500,000**. H. Boyer Marx, 832 Forsyth Bldg., Atlanta, Ga., landscape archt. CD 6/4/59.

▲ **Ga., Atlanta**—Ga. Dpt. P. Health, 12 Capitol Square, plans by Gregson & Assocs., Mortgage Guarantee Bldg., Atlanta, and A. Thomas Bradbury, 60 5th St., N.E., Atlanta, PSYCHIATRIC TREATMENT CENTER, 1260 Briarcliff Road, N.E., **$10,000,000**. CD 10/20/60.

▲ **Ill., Evergreen Park (Br. Chicago)**—School Dist. No. 231, 99th and Kedzie Ave., HIGH SCHOOL ADDN. **$1,285,000**.

▲ **Ill., Pekin**—Pekin Community High School Dist., 207 N. 9th St., plans by Foley, Hackler, Thompson, 400



Franklin P. Taylor, Sales Manager, Buffalo Crushed Stone Co., a Unit of Houdaille, Bowmansville, N. Y.

"Dodge Reports give us advance information on practically every opportunity to do business in our area," says Mr. Taylor. "Without this up-to-the-minute data we receive every morning, we would lose substantial amounts of business."

His men virtually eliminate blind sales calls because Dodge Reports tell them who is in the market *right now*. Calls are more effective because Dodge Reports also show them what current prospects need for specific jobs. Leads from Dodge Reports account for 95% of the company's multi-million-dollar annual volume, says Mr. Taylor.

Mr. Taylor also purchases Dodge Potentials and Trends. He uses this monthly statistical summary of construction activity for measuring effectiveness of sales efforts, budgeting, deploying salesmen, and setting more equitable sales quotas.

Dodge Reports and Construction Statistics are available for the types of construction projects you sell, for your marketing areas. Get further details, send the coupon today.

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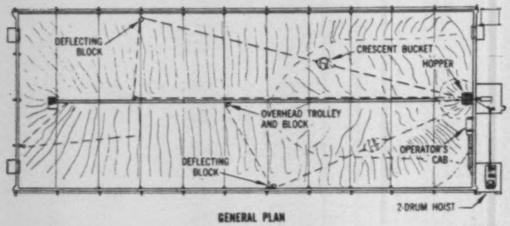
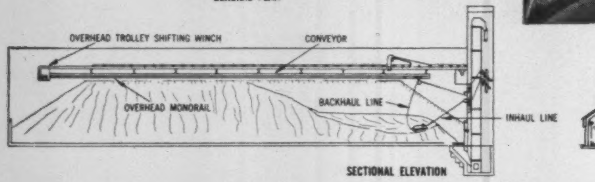
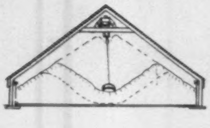
ENR-71

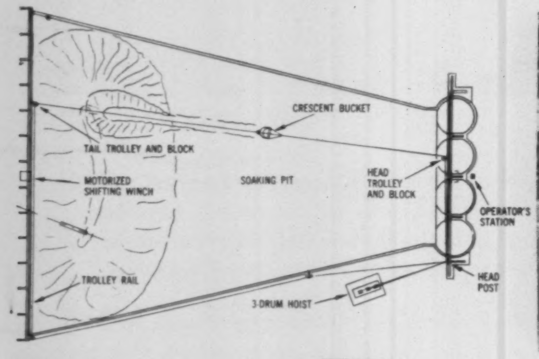
Sauerman Machines And Methods For Storage And Reclamation

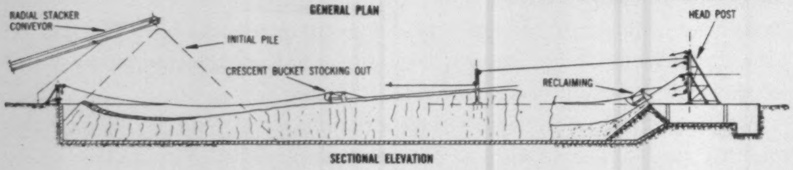






Drawing and photograph illustrate DragScraper Machine using an elevated monorail trolley system along the center line of the storage building for straight-line recovery of bulk material. Overhead trolley and block are controlled by a shifting winch. Recovery is to a hopper located at center of one end wall. Deflecting blocks placed on the side walls permit the bucket to reclaim material from side areas.





Installation drawing shows details of DragScraper Machine handling shale in a soaking pit. Monorail trolleys at each end provide lateral shifting for the Crescent. The third drum on the hoist is used to shift the head end trolley and a motorized winch shifts the tail trolley assembly. The Sauerman stocks out from initial piles, reclaims shale to the wash mills at head end as required. Photo shows Crescent bucket on pile. Shifting winch, trolley rail and conveyor system are in background.

Sauerman Machines stockpile and reclaim bulk materials from buildings, bins and ground storage piles. The Crescent scraper bucket can deliver directly to one or more hoppers at ground level, to conveyors and processing machines or up a ramp to an elevated hopper.

Users of DragScraper Storage Systems find this equipment handles material at less cost per ton than other methods of stockpiling or reclaiming. DragScrapers are economical to operate in limited indoor storage facilities or ground storage areas of several acres or more. Materials handled vary in weight up to 200 lb. per cu. ft. Sauerman Machines are built in sizes from 1/3 to 15 yd. to match your tonnage requirements.

Call or write for recommendations on your material handling job. Catalog E gives specifications and general information.

SAUERMAN BROS., INC. 632 SO. 28th AVE. BELLWOOD, ILL.
LInden 4-4892 • Cable CABEX—Bellwood, Illinois

Crescent Scrapers • Slackline and Tautline Cableways • Durolite Blocks

Commercial National Bank Bldg., Peoria, Pekin Community HIGH SCHOOL, **$4,000,000.** CD 5/24/61.

▲ **N. J., Hackensack**—Bd. Educ., 355 State St., plans by Chas. Cleveland, 214 Main St., Hackensack, JUNIOR HIGH SCHOOL. **$2,453,000.** Melvin Gelber, 31 Mercer St., Hackensack, N. J., mech. engr. Schwartz & Senes, 16 West Palisades Ave., Englewood, N. J., struc. engrs. CD 2/15/61.

▲ **N. Y., Fredonia**—Bd. Educ., plans by Sargent, Webster, Cranshaw & Folley, 2112 Erie Blvd., East Syracuse, Zone 3, SENIOR HIGH SCHOOL. **$1,875,000.**

▲ **N. Y., New York**—New York City Housing Auth., 299 Broadway, New York Zone 7, 13 story 100 unit 147 x 200 ft PUBLIC HOUSING APARTMENT, St. Nicholas Ave. and W. 117 St. **$1,730,000.**

▲ **N. Y., Oceanside**—Bd. Educ. UFSD No. 11, 2477 South Long Beach Rd., voted referendum June 28, SENIOR HIGH SCHOOL ADDNS. Bower and Skillman Aves. **$2,500,000.** Knappe & Johnson, 2110 Northern Blvd., Manhasset, N. Y., archts. CD 6/7/61.

▲ **N. Y., Plainview**—Plainview-Old Bethpage Central School Dist. 4, Jamaica Ave., voted **$4,790,000** referendum June 28, JUNIOR HIGH SCHOOL, Washington Ave. north of Old Country Rd. CD 6/12/61.

▲ **O., Clyde**—Bd. Educ., plans by Strong, Strong & Strong, 124 S. West St., Lima, bond election Nov. 7, HIGH SCHOOL, **$1,160,000.** CD 11/15/60.

▲ **O., Galion**—Galion Community Hospital, plans by C. H. Shiveley & Assocs., Fremont, HOSPITAL, **$1,500,000-$2,000,000.**

▲ **O., Toledo**—Bd. Educ., Ross Twp. School Dist., Woodville Rd., Zone 5, $1,625,200 bond election Nov. 7, HIGH SCHOOL, Woodville and Lemoyne Rds., **$1,250,000,** incl. FOOTBALL STADIUM, **$90,000.** Buehrer & Stow, 1931 Sylvania Ave., archts. CD 11/9/54.

▲ **O., Worthington**—Bd. Educ., 50 E. Granville Rd., **$2,400,000** bond election Nov. 7, SCHOOLS. CD 6/28/61.

▲ **Tenn., Jackson**—Jackson Housing Authority, 224 low income HOUSING UNITS, **$2,100,000.**

▲ **Ont., Canton**—Canton-Massillon Metropolitan Housing Auth., 1037 Rue Court SE, 100 unit HOUSING, **$1,683,000.** Bids late 1961.

▲ **Ont., Chatham**—Chatham Bd. Educ., c/o Robert Campbell, 93 William St. N., plans by Frederick W. H. Dawes, 216 Queen St., VOCATIONAL SCHOOL, McNaughton Ave. E & Taylor Ave. **$1,500,000.**

▲ **Ont., Toronto**—Ryerson Institute of Technology, 50 Gould St., plans by D. G. Creba, ch. archt., Dpt. P. Wks. Queens Park, Toronto, and S. B. Coon & Son, 745 Mt. Pleasant Rd., VOCATIONAL TRAINING INSTITUTE WING, city block bounded by Gerrard, Church Gould and Victoria Sts., **$6,000,000.** CD 2/28/61.

COMMERCIAL BUILDINGS

▲ **Calif., Los Angeles**—Webb Knapp, Inc., 9908 Santa Monica Blvd., Beverly Hills, and Aluminum Corp. of America, 1200 Alcoa Bldg., Pittsburgh, Pa., plans by Welton Becket & Assoc., 10,000 Santa Monica Blvd., 13 story, steel, concrete block OFICE, Incl. underground GARAGE, 1817 Avenue of Stars. **$6,710,000.**

▲ **Fla., Fort Lauderdale**—Nassau Point Center, c/o K. C. Oberle Co., 3365 N. Federal Hy., plans by Gamble, Pownall & Gilroy, 1407 E. Las Olas Blvd., SHOPPING CENTER, North Federal Highway and Oakland Park Blvd. **$3,000,000.**

▲ **Fla., Orlando**—Allied Department Stores plans by Gamble, Pownall & Gilroy, 1407 East Los Olas Blvd., Fort Lauderdale, 20,000 sq. ft. Jordan Marsh DEPARTMENT STORE, Colonial Plaza Shopping Center. **$2,000,000.** CD 6/12/61.

▲ **Fla., Orlando**—Meyer Hotels, 315 Julia St., Jacksonville, plans by William B. Tabler, 401-7th Ave., New York, N. Y., 4 and 5 story, 175 room HOTEL, with swimming pool, parking facilities, Rosalind at Washington St. **$2,000,000.**

▲ **Ga., Atlanta**—Phoenix Investment Co., c/o James C. Wise, Simpson, Aiken & Assocs., archts., 873 Spring St., NW, 2 APARTMENTS, Piedmont Ave., NE between Cain and Harris Sts. **$4,000,000.** Carver, Hunt, 2125 Desmond Dr., Decatur, Ga. struct. engr. S. A. Delby, 873 Spring St. NW Atlanta, Ga. and W. L. Edwards, 176 Alexander St., NW, Atlanta, Ga. mech. engrs. CD 3/10/61.

▲ **Hawaii, Honolulu**—Landex Hawaii, 1423 Kapiolani Blvd., plans by Leo S. Wou, 232 Merchant St., Honolulu, Hawaii, 16 story truss type structure air-conditioned King's Grant OFFICE, parking, etc. **$3,700,000.**

▲ **Ill., Chicago**—Adams Management & Investment Co. c/o H. B. Shuman and I. Spector, 100 N. LaSalle St., Zone 2, plans by Hausner & Macsai, 104 S. Michigan Ave. Zone 3, 5 story, 201 unit MOTEL, parking lot, Congress Expressway and Canal St., **$3,500,000.**

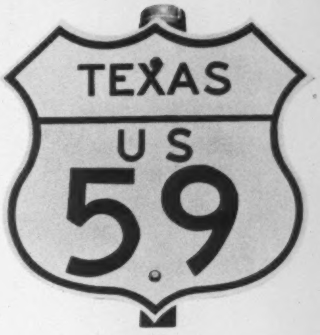
▲ **Ill., Chicago**—Transcontinental Investing Corp., 375 Park Ave., New York, N. Y., 20 story, Ambassador East APARTMENT HOTEL ADDN., N. State Parkway, **$6,000,000;** 10 story Ambassador West HOTEL ADDN., Dearborn St., **$3,000,000.** To go ahead 1963; CENTRAL AIR CONDITIONING, Ambassador East and West hotels, **$1,500,000.** To go ahead 1962; Ambassador East and West HOTEL MEDERNIZING, **$500,000.** To go ahead 1962.

▲ **Ill., Rockford**—Robert Cross Development Corp. c/o Tony Lamia Real Estate Agency, 1334 E. State St., 5 story MOTEL, swimming pool, parking areas, 1130-38 S. State St., **$1,500,000.**

▲ **Ind., Indianapolis**—Perine Buildings Inc., 1827 W. 73rd St., 2 story, bsmnt., 108 unit TOWN HOUSE APARTMENTS, swimming pool, Mitthoefer Rd. and E. 21st St., **$2,240,000.**

▲ **Mass., Cambridge**—Massachusetts Institute of Technology, 77 Massachusetts Ave., plans by Hugh A.

(Continued on page 89)



A
LOOK AT ONE
OF THE FINEST
**FREEWAY
PLANS**
IN THE
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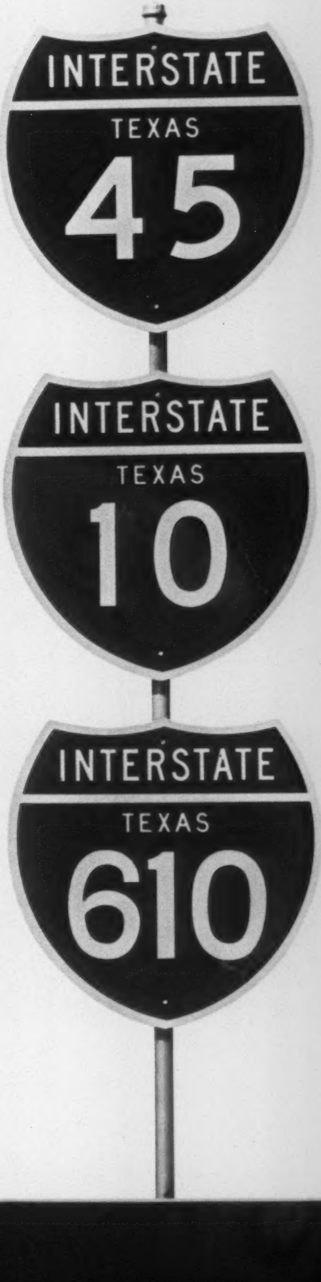
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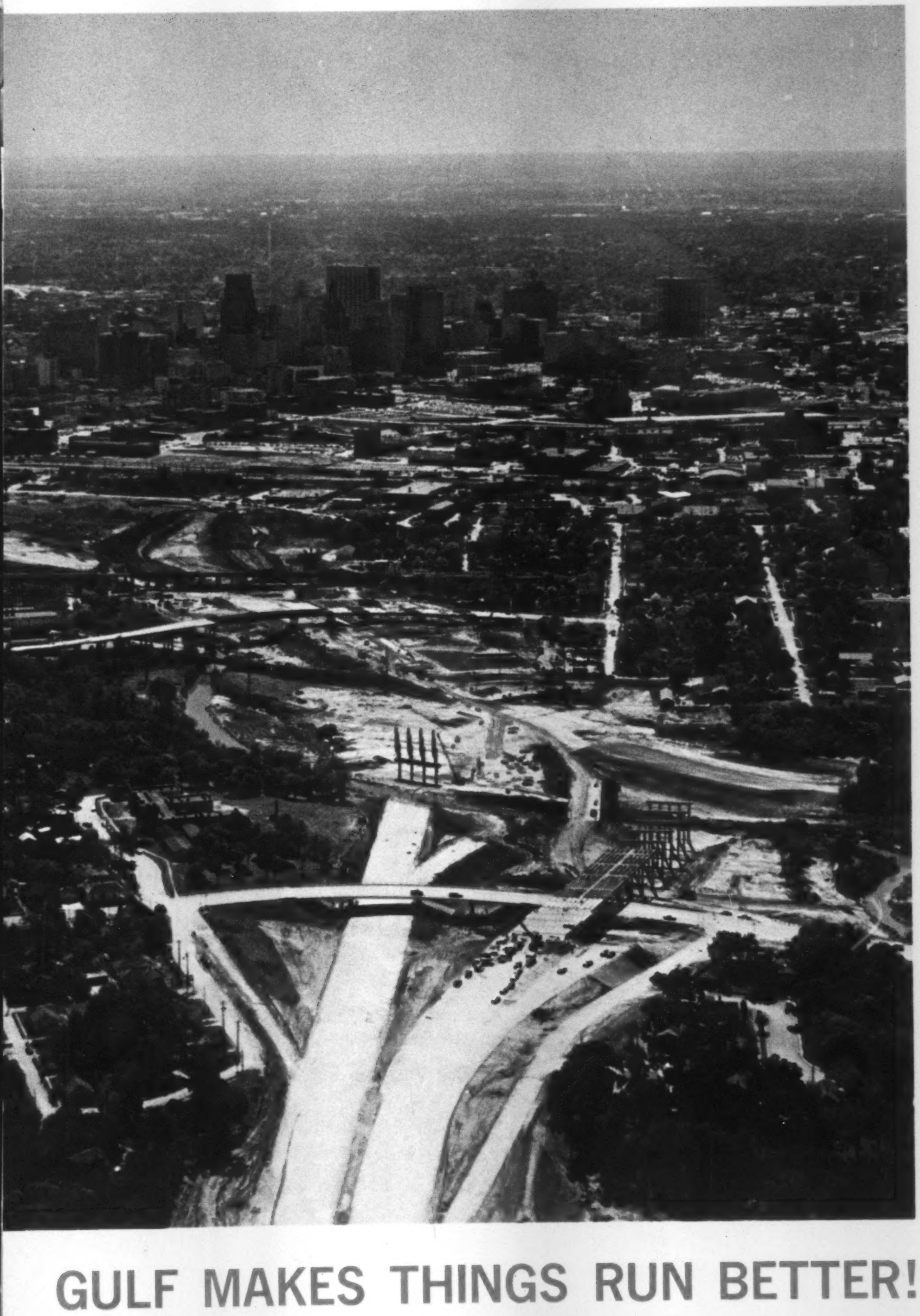
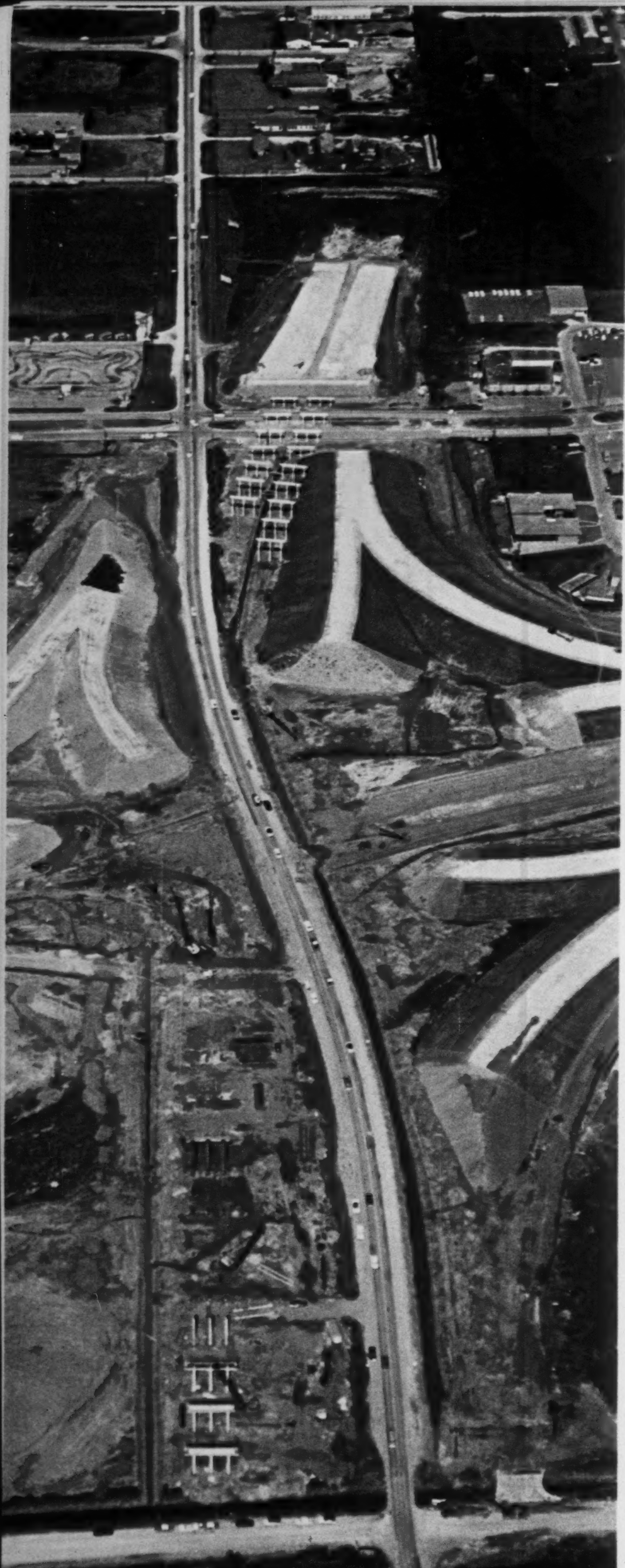
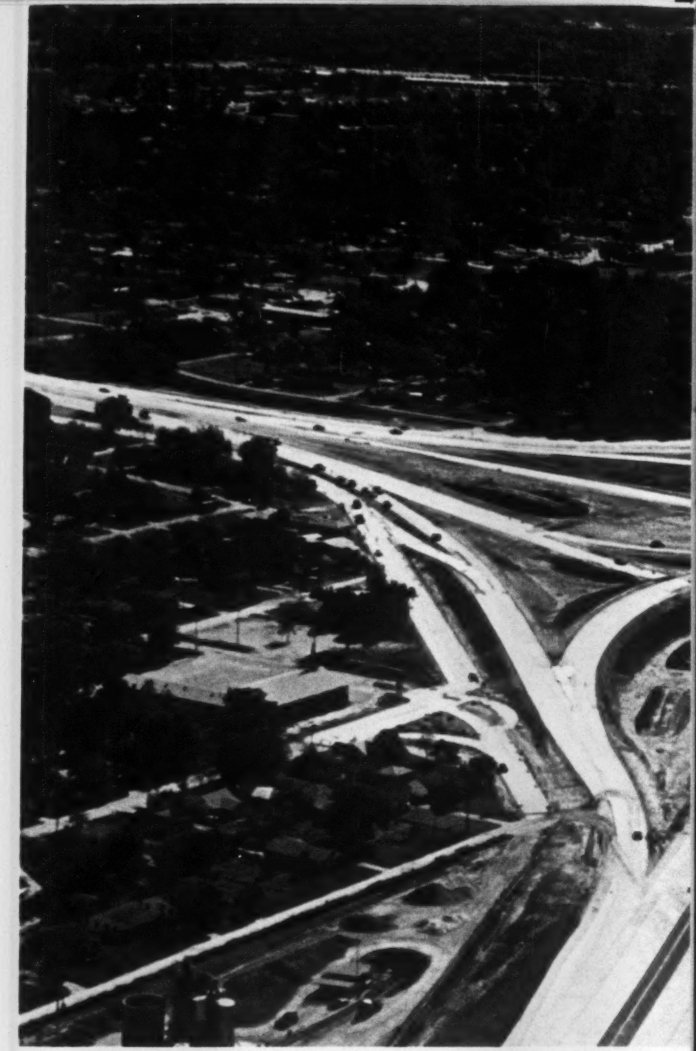


GULF MAKES THINGS RUN BETTER!

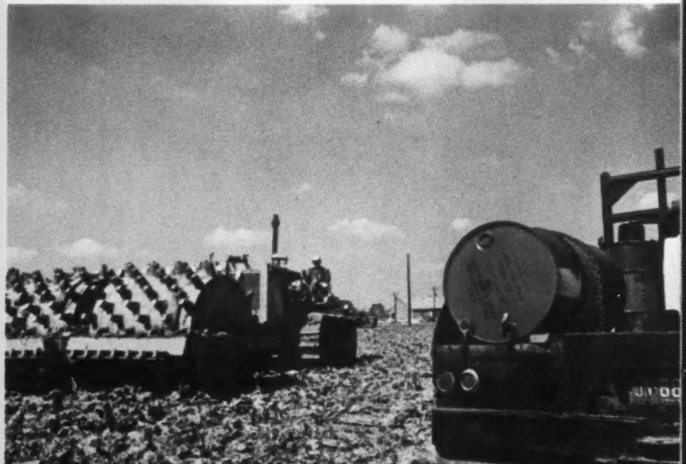




North Loop Cloverleaf. Motorists on the North Freeway and North Loop will intersect at this massive interchange. It's about 4 miles north of Houston's downtown complex.

◀ **West Loop Interchange.** This four-level interchange is part of the Southwest Freeway. By 1962, it will carry traffic to and from the surrounding apartment sections and subdivision.

North Loop. A "sheep's foot" roller compacts the earth at this North Loop project. The truck delivers Gulf fuels and lubes to equipment at the job site.



Houston's new urban freeway system

The ultimate goal: a 244-mile freeway system (70 miles have already been opened to traffic). Total cost: $435-million. This plan will form a complete inner and outer loop around Houston. Nine freeways will poke out from the city like spokes on a giant wheel—similar to ancient Rome.

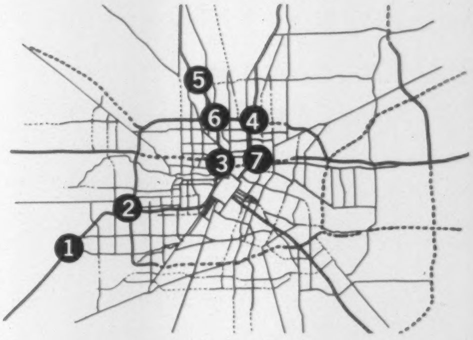
From downtown Houston, motorists will buzz through multi-layer interchanges, over modern steel bridges and onto elevated expressways to reach suburban homes in minutes. Completion date: late next year.

At the present time, construction is heaviest along three roads (check map): Interstate Highway 45, the North Freeway which leads to Dallas; Texas, U.S. 59, the Southwest Freeway which will shoulder residential traffic; and Interstate Highway 610, the North Loop—a badly needed bypass for industrial traffic on the Port-of-Houston side.

During 1959 and 1960, a total of 38 different jobs were contracted on the Houston freeway system. Gulf® fuels and lubricants were used on no less than twenty-four of these contracts (quite a record).

By the end of 1960, freeway contractors had purchased 2,338,000 gallons of Gulf diesel fuel, 2,060,000 gallons of Good Gulf® gasoline, 101,000 gallons of Gulf motor oils, and 36,000 pounds of Gulf greases. These vital statistics prove that Gulf products were really in the thick of this tremendous project.

Learn about Gulf service on the next page



1. Southwest Freeway on Texas, U.S. 59
2. West Loop Interchange on Interstate Highway 610
3. North Freeway Inner Loop on Interstate Highway 45
4. North Loop on Interstate Highway 610 and Texas, U.S. 59
5. North Freeway on Interstate Highway 45
6. North Loop Cloverleaf on Interstate Highways 610 and 45
7. Cloverleaf on Interstate Highway 10

GULF

Gulf Sales Engineers serve 24 major contractors on the new Houston freeway system

In addition to top performance from Gulf fuels and lubes, our contractor-customers get the helpful and money-saving counsel of Gulf Sales Engineers.

A Gulf Sales Engineer is always ready to assist in the proper selection of types and grades of fuels and lubricants. He'll also help work out a simplified lubrication program to avoid unnecessary lube storage and handling on the job. Furthermore, he'll provide practical assistance on any technical problem that involves a petroleum product.

When you combine Gulf service with Gulf products, it's not hard to figure out why these Houston freeway contractors depend on Gulf.

Brown & Root, Inc.
Gulf Bithulithic Co.
F&C Engineering Co. & Inc.
John G. Holland Company
Trinity Construction Co., Inc.
F. M. Reeves & Son
Elmer C. Gardner, Inc.
Bane & Massingale, Inc.
M&N Construction
M. C. Winter's Co.
Ross Anglin & Son
William Bros. Construction Co., Inc.
San Jancinto Equipment
Austin Roads Co.
Austin Bridge Co.
Jones G. Finke

Prime Contractor, J. D. Nipper (left) and James Mason, General Superintendent (center), M&N Construction Company, and Bill Taylor, Gulf Houston Area Manager. Nearby, a dozer gulps Gulf diesel fuel from a handy 1,000-barrel trailer tank.

Prime Contractor, John G. Holland, Jr. (right), John G. Holland Company, and Jeff Bolling, Gulf Sales Engineer. This is the Post Oak Interchange on the Southwest Freeway. Those giant bridge columns will soon support a modern expressway.

A final reminder for your next project

Give us the opportunity to serve you, and see for yourself how Gulf makes things run better! Just call a Gulf Sales Engineer at your nearest Gulf office. Or write directly to Gulf Oil Corporation.

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Houston 2, Texas

INTERSTATE
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SP-10098

(Continued from page 84)

Stubbins & Assoc., 806 Mass. Ave., 12 story MARRIED STUDENTS HOUSING and four-3 story EFFICIENCY APARTMENTS. **$2,500,000.** Bids Aug. 1961. CD 4/12/61.

▲ **Mass., Raynham**—Jordan Marsh Co., 450 Washington St., Boston, Mass., plans by Francis X. Gina & Assoc., 219 E. 44 St., New York, N. Y., Bay Colony SHOPPING CENTER, Jct. Rtes. 24 and 44. **$6,000,000-$7,000,000.** Bids July-August 1961. CD 11/26/56.

▲ **Minn., Duluth**—Diocese of Duluth, Chancery Office, 215 West 4 St., plans by A. C. Lucas, Jr., 800 Alworth Bldg., Catholic HIGH SCHOOL. **$2,750,000.** Constr. 1962.

N. Y., New York—Grosvenor Neighborhood House, Inc., 743 Amsterdam Ave., New York 23, N. Y., plans by Moore & Hutchins, 800 2 Ave., New York 17, N. Y., 3 story SOCIAL SERVICE CENTER (Neighborhood House) incl. enclosed roof for playground, Amsterdam Ave. and 105 St. southeast corner. **$775,000.** Jos. P. Wohlpart Assocs., 155 E.42 St., New York 17, N. Y., mech. engrs. Harwood & Gould, 233 W.42 St., New York 36, N. Y., struct. engrs. CD 12/5/60. **$4,700,000.**

▲ **O., Columbus** — Ohio School Employees Retirement System, 12 N. 3rd St., plans by Kellam & Foley, 1621 W. 1st Ave., 12 story MOTOR HOTEL, OFFICE, 270 car parking, Gay and 3rd Sts. **$7,000,000.** CD 7/5/61.

▲ **O., Dayton**—Christ Episcopal Church, 20 W.1st St., CHURCH, 10 story HOME FOR AGED, 3 story PARISH HALL ADDN., **$3,000,000.**

▲ **O., Middleburg Heights**—Gross-Aetna Constr. Co., 3785 Hetzel D., Parma, plans by Jack Alan Bialosky Associates, Superior Bldg., Cleveland, Zone 14, 11, 198 suites garden APARTMENTS, Bagley North of Pearl Rd., **$2,000,000.**

▲ **Tenn., Nashville**—St. Thomas Hospital, 21st. & Hayes Sts., 74 bed wing HOSPITAL ADDN., **$3,000,000.**

▲ **Tex., Dallas**—Great National Life Insurance Co., Great National Life Bldg., plans by Grayson Gill, 913 San Jacinto Bldg., archt-engr. HOME OFFICE, **$1,500,000.** Hint & Joiner, Inc., 4512 N. Central Expressway, consult. engr. Bids 1961. CD 2/28/61.

▲ **Tex., Houston**—Manuel Maxwell and A. J. Rosen, c/o S. N. Adams, 4000 Westheimer, Houston, 8 story OFFICE, 4001 Westheimer, **$3,750,000.** Bids mid or late 1962.

▲ **Tex., Lubbock**—Commercial Buildings, Inc., 2221 34th. St., SHOPPING CENTER, 50th. & Ave. Q, **1,000,000-$1,500,000. CD 6/8/61, under Owner,** c/o Leroy Elmore, **as owner.**

▲ **Tex., San Antonio**—Trinity University, 715 Stadium, plans by O'Neil Ford, 526 King Wm. St., and Bartlett Cocke, 3501 Broadway Ave., 86,000 sq. ft. PHYSICIAL EDUCATION CENTER, **$1,250,000.** CD 8/23/45.

▲ **Va., Vienna**—American Symphony Orchestra League, P.O. Box 164, Charlestown, W. Va., plans by Edward Durrell Stone, 7 East 67th St., New York, N. Y., Symphony Hill ADMINISTRATION BLDG., CONFERENCE BLDG., DINING PLACE and GREAT HALL, Wolf Trap Farm off Rte. 7. **$1,500,000,** ($500,000 first unit).

▲ **Alta., Calgary**—Western Hotels, Inc. and Marwell Constr. Co., Ltd., 1500 W. Georgia St., Vancouver, B. C., 9 story HOTEL, swimming pool, 4th Ave. and 3rd St. SW, **$6,000,000.** Bids Winter 1961.

▲ **Ont., Toronto**—Romdon Estates Ltd. c/o S. J. Donnenfield, 42 Heathdale Rd. and David Romberg, 18 Alexandra Wood St., (3 yr. program) 5 story HOTEL, bowling and curling facilities, two championship GOLF COURSES, with driving range, **$3,500,000.**

INDUSTRIAL BUILDINGS

▲ **Ala., Mobile**—Organic Soil Conditioners, Inc., c/o Garet Van Antwerp III, Van Antwerp Bldg., Garbage Handling PLANT, McDuffie Island, **$1,250,000.**

▲ **California**—Pacific Gas & Electric Co., 245 Market St., San Francisco, Calif., 325 megawatt NUCLEAR POWER PLANT inclosed in 120 ft. diam. concrete and steel structure, 100 ft. below ground, on Bodega Bay, 50 mi. north of San Francisco. **$60,000,000.** (**General Electric Co., River Rd., Schenectady, N. Y.** will supply reactor and generators). Owner applying for permit to Atomic Energy Commission and California Public Utilities Commission.

▲ **N. J. Livingston**—**Foster Wheeler Corp., 666 5th** Ave., New York City, N. Y. plans by Rouse Dubin & Ventura, 55 W. 42nd St., New York City, N. Y. LABORATORY and OFFICE, S. Orange Ave. **$3,000,000.** CD 6/28/61.

▲ **R. I., Pawtucket**—Rhode Island Wholesale Food Distribution Center Assoc., Inc., c/o Charles A. Maguire & Assoc., Inc. engr. Turks Head Bldg., Providence, four MARKET TERMINALS, along New Haven RR right-of-way, between Smithfield Ave. Bridge and St. Francis Cemetary, **$10,000,000.** Bids September 1961.

▲ **Wis., Brookfield**—Milwaukee Hydraulic Products Corp., 800 South 108th St., Milwaukee, 350x250 ft. MANUFACTURING PLANT and OFFICE. **$1,500,000.**

▲ **N. B., Saint John**—Rothesay Paper Corp., c/o Sogomines Ltd., 1980 Sherbrooke St. W., Montreal, Que., three stages, NEWSPRINT MILL, Total Est. **$32,000,000.** J. H. Price & Assocs., Ltd., 1980 Sherbrooke St. W. and E. B. Cowan, 5460 Patricia Ave., both of Montreal, Que., consult. engrs.

▲ **Que., Montreal**—Dominion Tar and Chemical Ltd., Sun Life Bldg., Howard Smith Paper Mills Ltd., 407 McGill St., and St. Lawrence Corp. Ltd., 840 Sun Life Bldg. Montreal, 2 story Pulp and Paper RESEARCH CENTER, west end of Montreal Island, **$2,500,000.**

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The joints are self-sealing, offering dramatic savings in installation time and trouble. Made of resilient materials, they are designed to resist corrosion from acids and gases, infiltration and exfiltration.

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These revolutionary joints are now available on lifetime Vitrified Clay Pipe all over the country on sizes from 4 inches to 36 inches, in some areas, up to 42 inches. They are built to exceed rigid ASTM and other applicable standards.

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Research combines clay's long life with fastest jointing ever.

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1028 Connecticut Avenue, N.W.
Washington 6, D. C.

NATIONAL CLAY PIPE MANUFACTURERS, INC.
1028 Connecticut Ave., Washington, D. C.

Please send me full details on the new factory-made compression joints on Clay Pipe.

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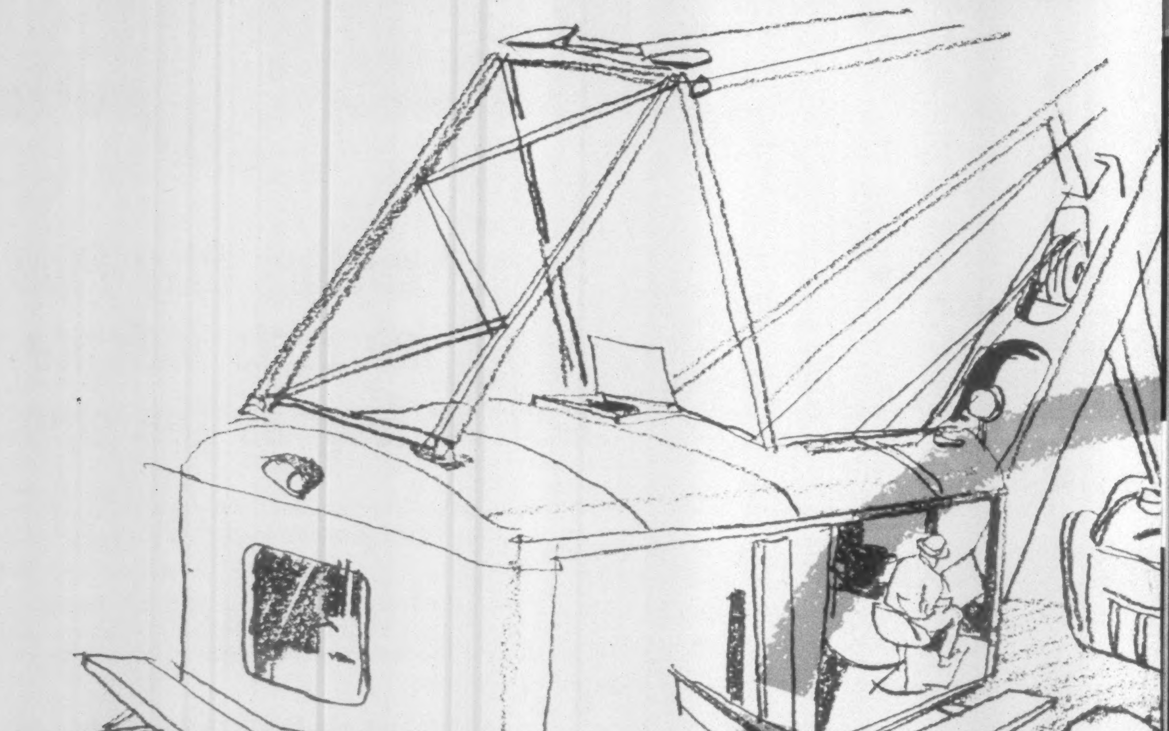
NEW 27-ton rear dump



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619C

Athey PR619C Rear Dump teams up with new 280 H.P. Cat* 619C Tractor for greater payload performance!

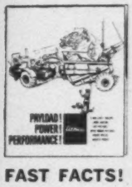
When you can haul 3 or 4 more tons each trip...load it quicker and move it faster... there's extra profit to be made on even the toughest hauling jobs. That's the advantage the new Athey-Cat 619C hauling team gives you—and it's here, now!

The new Athey PR619C Rear Dump Trailer boosts payload! The big 27-Ton capacity body of "T-1" Steel packs haul profit in, cuts dead weight out. Wide, open-mouthed body and low height simplifies loading. Ground hugging roadability puts power to work efficiently for higher speeds, easier handling. The new 280 H.P. Cat 619C Tractor supplies power aplenty for your toughest hauls. Power Shift Transmission takes the work out of handling, provides nine speeds with three shifts and no clutch!

Find out how this new hauling combination can boost your payloads and haul profits. Get the full story from your Athey-Caterpillar Dealer, as well as facts about the other new Athey Trailers.

Athey

PR619C REAR DUMP TRAILER



FAST FACTS! Big Brochure describes the new Athey line. Write for "PAYLOAD-POWER-PERFORMANCE."

*Caterpillar and Cat are registered trademarks of Caterpillar Tractor Co.

DESIGNERS AND MANUFACTURERS OF HEAVY DUTY LOADING AND HAULING EQUIPMENT

Bids—Low Bids—Contracts—Second Section

NEW ENGLAND

BUILDINGS—BA

▲ **Conn., Windsor Locks**—BA 7/27—Town, School Bldg. Comn., Church St., JUNIOR HIGH SCHOOL, off South Elm St., Hamilton Manor. $1,250,000. Plans deposit $100. Russell, Gibson & von Dohlen, 10 Ellsworth Rd., West Hartford, archts. Bemis & Freeman, 36 Pearl St., Hartford, engrs. CD 6/13/61.

▲ **Conn., Bridgeport** — BA 8/21 — Bridgeport Jewish Community Center, 360 State St., JEWISH COMMUNITY CENTER, incl. swimming pool, auditorium, Park Ave. $1,150,000. Civkin, Schecter & Goodman, 1188 Main St., archts. Smith & Hess Assocs., 772 East State St., Westport, engrs. CD 8/31/60.

HEAVY CONSTRUCTION—LB & CA

▲ **NEW HAMPSHIRE**—Dpt. P. Wks., Hys., Concord, bids opened July 6, ROAD,
Suburban Excavators, Inc., 4 New Salem St., Wakefield, Mass., LB **$1,156,843,** (5 bidders), 1.682 mi. hot b. conc., roadway; 142 ft. and 151 ft. steel beam bridges, on Interstate Rte. 93, Proj. I-93-1(43)17, Windham, Rockingham Co. CD 6/29/61.

▲ **MASSACHUSETTS** — Commonwealth Mass, Dpt. P. Wks., 100 Nashua St., Boston, Bids opened 7/11, ROAD,
Henley-Lundgren Corp., 193 Hartford Pike, Shrewsbury, Mass., and **Central Constr. Co.**, 79 Beacon Ave., Lawrence, Mass., LB **$3,654,653**, est. $4,021,537, relocation Rte. 3, Proj. F-355(12), Hanover-Norwell-Marshfield and Pembroke Co. CD 6/21/61.

▲ **John McCourt Co.**, 28 Wolcott St., Readville, Mass., CA **$1,126,098**, est. $1,125,000, MPA 1.018, REHABILITATION RUNWAYS 4L-22R-4R 221 and 9-27, HOLDING APRON 22L, Logan International Airport, EAST BOSTON, MASS. Commonwealth Mass. Port Auth., 141 Milk St., Boston, Mass. BA 6/20. CD 6/22/61, under LB.

BUILDINGS—LB & CA

▲ **C. Profenno Co.**, 127 Marginal Way, Portland, Me., CA **$1,245,900**, Central HIGH SCHOOL, Old Gosline Lot, GARDINER, ME. School Administrative Dist. II, Gardiner, Me. BA 6/22. CD 6/28/61, under LB.

▲ **S. Volpe & Co., Inc.**, 185 Devonshire St., Boston, Mass., CA **$1,277,052**, Proj. PHA Mass 2-30, HOUSING for the ELDERLY, Columbia Rd., South Boston, BOSTON, MASS. City Housing Auth., 230 Congress St., Boston, Mass. BA 6/30. CD 7/6/61, under LB.

▲ **E. J. Pinney Co., Inc.**, 220 Dwight St., Springfield, Mass., LB **$1,954,400,** (6 bidders), M. Marcus Kiley JUNIOR HIGH SCHOOL, 180 Cooley St., SPRINGFIELD, MASS. City, School Bldg. Comn., City Hall, Springfield, Mass. BA 7/7. CD 6/1/61.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—LB & CA

▲ **NEW YORK**—State Dpt. P. Wks., State Office Bldg., Albany, ROAD,
Johnson, Drake & Piper, Inc., 86 Trinity Pl., New York 6, N. Y., CA **$6,719,000,** main line, rein.-con. slab roadway (struct) 0.3 mi. grade, drain, misc. work 0.36 mi. incl. elev. structure and Prospect Expr. Inter., Interstate Rte. Comn. 512 Gowanus Expressway, Cont. 3 (2nd Ave. to 20 St.) incl. Prospect Expressway Interchange, Rte. 278 FIGE 61-1. Proj. EI-278-1(60), Kings Co. BA 5/25. CD 5/26/61, under LB.

▲ **Acme Missiles & Constr. Corp.**, 43 N. Village Ave., Rockville Centre, N. Y., LB **$2,224,617**, (9 bidders), AIR ROUTE TRAFFIC CONTROL CENTER BLDG., MacArthur Field, ISLIP, N. Y. Federal Aviation Agency, New York International Airport, Jamaica, N. Y. BA 7/11. CD 5/29/61.

▲ **T & T Contg. Corp.**, 4814 Glenwood Rd., Brooklyn 3, N. Y. LB **$1,173,083**, (4 bidders), Contr. 9 AUTOMATIC ELECTRIC PUMPING STATIONS within an Island of Safety in Seagirt Blvd. south side approx. at Beach 9 St., Fifth Ward, Queens Boro, NEW YORK. President Queens Boro, Rm. 228, Queens Boro Hall, 120-55 Queens Blvd., Kew Gardens 24, N. Y. BA 6/30. CD 6/15/61.

▲ **Cayuga Constr. Corp.**, 30 Vesey St., New York 7, N. Y., and **Johnson Drake & Piper, Inc.**, 86 Trinity Pl., New York 6, N. Y., CA **$7,931,000** Part of RAPID TRANSIT RAILROAD, Section No. 13, Rte. No. 101, 6 Ave. W. 19 to W. 31 Sts., Manhattan Boro, NEW YORK, N. Y. New York City Transit Auth., 370 Jay St., Brooklyn 1, N. Y. BA 6/2. CA 7/6. CD 6/6/61, under LB.

▲ **DELAWARE** — State Hy. Dpt., Hy. Administration Bldg., Dover, ROADS,
C. J. Langenfelder & Sons, Inc., 8427 Pulaski Highway, Baltimore, Md., CA **$12,977,429**, stabilize, backfill, two structures, pave Basin Rd., 1.873 mi., Christina River Interchange, FA Projects I-95-1(11), I-95-1(15), I-95-1(16) and I-95-1(18), Contracts L-1(21)-1, I-1(23) and I-1(24), New Castle Co. BA 6/21/61. CD 6/23/61, under LB.

BUILDINGS—LB & CA

▲† **George Rosen & Son, Inc.**, 1650 Broadway, New York 19, N. Y., CA **$1,023,624,** ALTERATIONS WHERRY HOUSING, Fort Hamilton, ENG-30-075-61-156, BROOKLYN, N. Y. U. S. Eng., 111 East 16 St., New York 3, N. Y. BA 6/23. CA 6/28. CD 6/29/61, under LB.

▲ **Starrett Bros. & Eken, Inc.**, 733 Third Ave., New York 17, N. Y., CA East. **$2,500,000** BANK and OFFICES ALTERATIONS, 34-42 Wall St., NEW YORK, N. Y. 40 Wall St. Co. (Div. Transatlantic Real Estate Co.), 40 Wall St., New York 17, N. Y., mech. engrs. Purdy & Hendrson Assocs., Inc., 1 Madison Ave., New York 10, N. Y., struct. engr. CD 5/16/61.

▲ **Ulster Holding Corp.**, 16 Court St., Brooklyn 2, N. Y., Owner Builds, **$6,000,000,** 19 story, 240 unit APARTMENT, 1652-58 First Ave. and 401-17 86 St., NEW YORK, N. Y. CD 4/28/61.

▲ **Michael Riesz & Co., Inc.**, 871 King George Hy., Fords, N. J., LB **$1,154,800,** (6 bidders), general contract HIGH SCHOOL, MATAWAN, N. J. Consolidated Bd. Educ., Matawan Borough and Twp., High School, Broad St., Matawan, N. J. BA 7/7/61. CD 6/23/61.

▲ **Roosevelt Properties, Inc.**, Roosevelt Raceway, Westbury, N. Y., CA Est. **$3,500,000,** 185,000 sq. ft. DEPARTMENT STORE, Old Country Rd. and Ellison Ave., WESTBURY, N. Y. Roosevelt Raceway, Inc., Roosevelt Raceway, Westbury, N. Y. CD 5/2/61, under N. Y., Roosevelt.

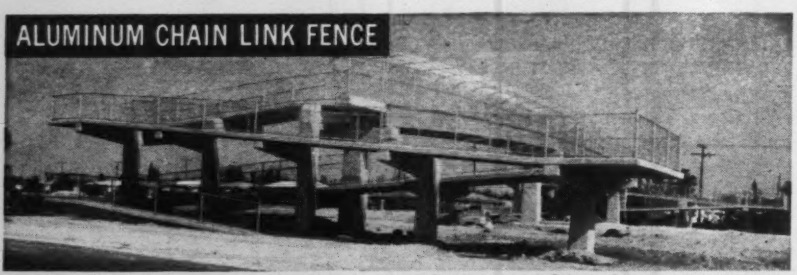
▲ **Frank A. McBride**, 75 Spring St., Paterson, N. J., CA **$2,032,032,** HEATING, VENTILATING and AIR-CONDITIONING contract, 14 story OFFICE for State Department of Labor & Industry, TRENTON, N. J. State Division of Purchase & Property, State House, Trenton, N. J. Grand total $4,241,332. BA 6/15/61. CA 7/11/61. CD 6/20/61, under LB;
Bethlehem Steel Co., Suburban Station Bldg., Phila., Pa., CA **$1,124,000,** STRUCTURAL STEEL contract, 14 story OFFICE for State Department of Labor and Industry, (Trenton N. J.);
Casey Electric Co., 460 Colfax Ave., Clifton, N. J., CA **$1,085,300,** ELECTRICAL contract, 14 story OFFICE for State Department of Labor and Industry, (Trenton, N. J.).

▲ **Henry A. Knott, Inc.**, 2406 Greenmount Ave., Baltimore 18, Md., CA **$1,129,500,** CAFETERIA, ADMINISTRATION BLDG. and 3 DORMITORIES, Spring Grove Mental State Hospital, CATONSVILLE, MD. State, Dpt. P. Imprvts., 301 W. Preston St., Baltimore 1, Md. BA 6/6. CD 6/13/61, under LB.

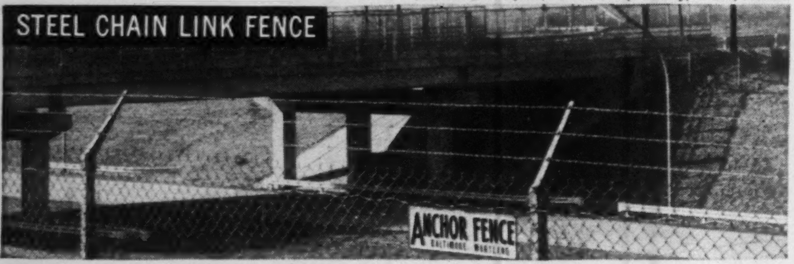
SOUTH

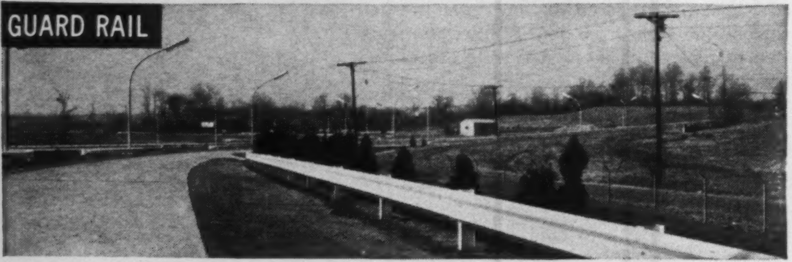
BUILDINGS—BA

▲ **Va., Fairfax**—BA 7/26—Medical Bldg., Inc., 6318 Wilson Dr., Falls Church, MEDICAL CENTER, Arlington Blvd. near Olin Dr. $1,500,000. Plans deposit



Pedestrian overpass, Palmetto Expressway, Miami, Florida.





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$50. J. M. McHugh, 1605 N. Quincy St., Arlington, archt. CD 3/25/60.

▲ **Fla., Miami**—BA 7/27—Federated Department Stores, Inc., Dadeland Shopping Center, c/o Weed-Johnson Assocs., archts., 550 Brickell Ave., 2 story, 309 x 242 CB DEPARTMENT STORE, SW 88th St. and 75th Ave. $2,000,000. H. J. Ross, Assocs., 1735 Biscayne Blvd., engrs. Ebner Assocs., 10 East 40th St., New York, N. Y., consult. engrs. CD 5/12/61.

▲ **Va., Norfolk**—BA 8/30—Virginia State Port Auth., Maritime Tower, 1,200 x 400 ft. rein.-con. pier on concrete piles; 360,000 sq. ft. transit shed; 100,000 sq. ft. refrigerator warehouse, two 120 x 750 ft. warehouses and misc. work for GENERAL CARGO TERMINAL. $15,000,000. Plans deposit $200. Lockwood Green Engineers, Inc., Montgomery Blvd., Spartanburg, S. C., engr. CD 8/8/60.

HEAVY CONSTRUCTION—LB & CA

▲ **Kaiser Aluminum & Chemical Corp.**, Kaiser Center, 300 Lakeside Dr., Oakland 12, Calif., CA 420 ALUMINUM TOWERS for 122 mi., 345 volt power transmission line from Kanawa River Plant, Charleston, W. Va. to Roanoke, Va. substation, WEST VIRGINIA and VIRGINIA. Appalachian Power Co., 40 Franklin Rd., Roanoke, Va.

BUILDINGS—LB & CA

▲ **Rood Constr. Corp.**, 17850 NW 29th Court, Opa Locka, Fla., CA **$1,690,000**, Fort Lauderdale HIGH SCHOOL, 1600 NE 4th Ave., FORT LAUDERDALE, FLA. Broward Co. Bd. P. Instruction, Admin. Bldg., 1320 SW 4th St., Fort Lauderdale, Fla. BA 6/22/61, CA 7/10/61. CD 6/28/61, under LB.

▲† **Algernon Blair Inc.**, 1209 1st National Bank Bldg., Montgomery, Ala., LB **$1,247,500**, (2 bidders), ALTERATIONS, ADDNS. to BLDGS. 1, 63 and 117, Veterans Administration Center, Gulfport Div., BILOXI, MISS. Veterans Admin., Munitions Bldg., Wash., D. C. BA 7/11. CD 6/2/61.

▲ **R. B. Ball Constr. Co., Inc.**, Box 2300, San Antonio, Tex., LB **$8,650,000**, 933 unit low-rent. Wm. J. Guste SENIOR HOMES, Melpomene, Clio, Simon, Bolivar and S. Robertson Sts., NEW ORLEANS, LA. City Housing Auth., 4040 Queen and Crescent Bldg., 344 Camp St., New Orleans, La. Curtis & Davis & Assocs., 338 Baronne, New Orleans, La., archts.-engrs. BA 7/11. CD 6/14/61.

MIDDLE WEST

HEAVY CONSTRUCTION—BA

▲† **Illinois**—BA 8/29—U. S. Eng., Clock Tower Bldg., Rock Island, PUMPING STATION NO. 3A, FLOOD CONTROL PROJECT, The Sny Basin, Calhoun Co., CIVENG-11-117-62-6. $1,500,000. **Plans deposit $4.** Small business setaside. CD 9/23/60.

BUILDINGS—BA

▲ **Ind., Mitchell**—BA 7/31—Bd. School Trustees, HIGH SCHOOL. $1,300,000. E. I. Brown Co., Illinois Bldg., Indianapolis, archt. CD 7/12/61.

HEAVY CONSTRUCTION—LB & CA

▲ **ILLINOIS**—Dpt. P. Wks. & Bldgs., Div. Hys., Centennial Bldgs., Springfield, Bids opened 7/11, ROADS,

Ill.—**E. T. Simonds**, Carbondale, Ill. and **J. D. Barter Constr. Co.**, Harrisburg, Ill., LB **$2,441,207**, (8 bidders), paving 5.65 mi. FAI 57 from West Frankfort to south of Johnston City, Franklin and Williamson Counties; LB **$1,585,442**, (5 bidders), paving 4.43 mi. FAI 57 from southwest of Johnston City to Ill. 13, Williamson Co.;

Ill.—**Robert R. Anderson Co.**, 4550 W. Patterson Ave., Chicago, Ill., LB **$4,191,637**, (10 bidders), paving, ramps, frontage roads, 0.76 mi. South Expressway between 57th and 51st Sts., Chicago, Cook Co.;

Ill.—**Thomas M. Madden Co.**, 4610 Van Buren St., Chicago, Ill., LB **$4,247,763**, (7 bidders), paving 0.75 mi. frontage roads, ramps, retaining walls, South Expressway, Chicago, Cook Co. CD 7/6/61.

▲ **MICHIGAN**—State Hy. Dpt., 732 Mason Bldg., Lansing, Zone 26, ROADS,

Mich.—**Canonie Constr. Co.**, South Haven, Mich., CA **$2,355,609**, 3.6 mi. I-96 from M-78 in Eaton County south and east to M-99 in Ingham County at southwest corner of Lansing incl. interchange at M-99, Eaton and Ingham Counties;

Mich.—**Holloway Constr. Co.**, 29350 Joy Rd., Livonia, Mich., CA **$3,305,442**, 6.2 mi. I-96 from Millet Rd. west, grade sep. at M-55 (Mason Rd.) and twin bridges at Shiawassee River, Linvington Co.;

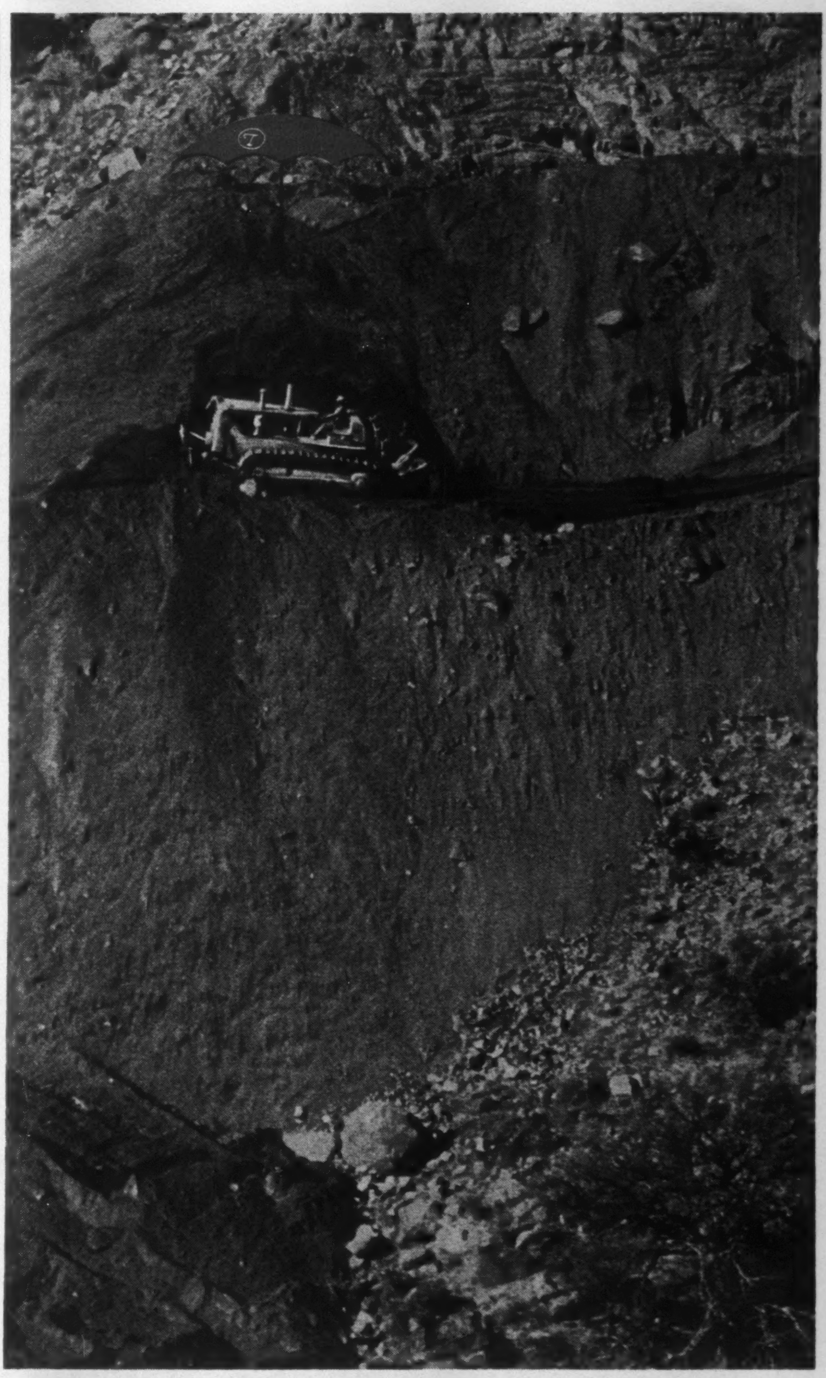
Mich.—**Sargent Constr. Co.**, 2840 Bay Rd., Saginaw, Mich., CA **$2,549,450**, 5.4 mi. I-696 from Interstate 96 freeway just west of Haggerty Rd. northwest of Farmington, east to Orchard Lake Rd. incl. grade seps. at Halstead and Farmington Rds. and interchange at Orchard Lake Rd., Oakland, Co.;

Mich.—**Western Constr. Co.**, 6227 16-Mile Rd., Warren, Mich., CA **$920,571**, 2.4 mi. I-696 from Orchard Lake Rd. east to Franklin Rd. incl. grade sep. at Inkster Rd., Oakland Co.;

Mich.—**Blue Water Excavating Co.**, 1821 Elmwood, Port Huron, Mich., CA **$606,653**, 18.6 mi. paving at three locations near Port Huron; 3.5 mi. M-136 west from M-51; 4.4 mi. M-51 from M-136 east to US 25A; 10.7 mi. M-51 from M-136 north to St. Clair-Sanilac County line near Jeddo, St. Clair Co., BA 6/21 CA 7/6. Grand Total $9,737,725. CD 6/27/61, under LB.

BUILDINGS—LB & CA

▲ **Gust K. Newberg Constr. Co.**, 2040 N. Ashland St., Chicago, Ill., CA **$14,747,000**, Stage 4-Contract 2-37, Robert R. Taylor HOMES, CHICAGO, Ill. Chicago



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(No. 22 of a series)

A Look at Structural Lightweight Concrete

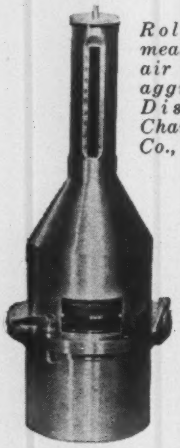
AGGREGATE USED for structural lightweight concrete has been available for over 40 years. Until recently, however, it has not been used extensively by the concrete industry and there is still much to be learned before its maximum potential can be realized.

The nature of this type of aggregate is such that it is virtually unheard of to use it without chemical admixtures. It is inherently angular and porous, requiring a relatively large quantity of paste and/or water for efficient handling and placing.

From the time lightweight aggregates were first introduced for structural purposes, investigations indicated that air entrainment was an absolute necessity for lubricating the mix and maintaining a minimum water/cement ratio. Air entrainment permits the aggregate to move more readily within the mix by minimizing particle interference. However, this is only one phase of the problem since the mix plasticity is also affected by the paste.

More recent research has led to the recommended use of water-reducing admixtures, as well, in lightweight concrete. Such admixtures provide the advantage of plasticizing the paste with a minimum quantity of water. The relatively high bleeding tendency of this type of concrete is thus further reduced.

Since air content is an important factor in lightweight concrete it is necessary to make frequent air determinations. The volumetric method, ASTM Designation C 173-58, sometimes referred to as the Roll-A-Meter method, has proved to be the most satisfactory procedure. The added air is measured without interference from the air which may already be trapped in the pores of the nonsaturated porous aggregate. The need of a correction factor which a pressure type meter would entail is thus eliminated.



Roll-A-Meter for measuring entrained air in lightweight aggregate concrete. Distributed by Charles R. Watts & Co., Seattle, Wash.

On performance, DAREX AEA Air Entraining Agent and WRDA Water-reducing Agent have come to be regarded as essential ingredients in top grade lightweight aggregate concrete.

The combination of these admixtures reduces the water requirement, thereby reducing bleeding and volume change due to drying shrinkage. At the same time, strength is increased with no increase in density. Finishing operations can be started with a minimum delay and yield will be more realistic.

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Housing Auth., 608 S. Dearborn St., Chicago 5, Ill. BA 7/6/61. CD 6/12/61.

▲ **Tonyan Bros., Inc.**, 100 Borden St., McHenry, Ill., CA **$2,000,000**, Resurrection HIGH SCHOOL, 7500 Talcott Rd., CHICAGO, ILL. Catholic Bishop of Chicago, 719 N. Wabash Ave., Chicago, Ill. BA 6/9/61. CD **2/23/61.**

▲ **Austin Co.**, 3650 Mayfield St., Cleveland, O., CA, design and construct 3 story, 26,000 sq. ft. CHEMICAL and METALLURGICAL LABORATORY, 75,000 sq. ft. OFFICE, Oak Brook HINSDALE, ILL. Chicago Bridge & Iron Co., 1305 W. 105th St., Chicago, Ill. CD 6/19/61.

▲ **Joseph J. Duffy Co.**, 4994 Elston Ave., Chicago 30, Ill., CA **$3,084,791**, ZERO GRADIENT SYNCHOTRON FACILITIES, Argonne National Laboratory, Proj. C-16, LEMONT, ILL. U. S. Atomic Energy Comn., 9800 S. Cass Ave., Argonne, Ill. Sverdrup & Parcel, Inc., 915 Olive St. St. Louis, Mo., engr. BA 6/15/61.

MISSISSIPPI TO ROCKIES

HEAVY CONSTRUCTION—SLC

▲ **Minn., St. Paul**—First National Bank, 332 Minnesota St., soon lets contract AIR-CONDITIONING and ELEC. WORK three Penthouses, etc. **$3,500,000.** Ellerbe & Co., 333 Sibley St., archts. C. S. **Lepold,** Inc., 214 S. Broad St., Phila., Pa., engr.

BUILDINGS—SLC

▲ **Minn., St. Peter**—Gustavus Adolphus College, soon lets contract 3 story, 103x253 ft. Alfred Nobel SCIENCE HALL. $1,200,000. Setter, Leech & Lindstrom, Inc., 133 Foshay Tower, Minneapolis, archt. CD 12/12/58.

HEAVY CONSTRUCTION—LB & CA

▲ **MINNESOTA**—State Hy. Dpt., Hy. Bldg., St. Paul, ROAD,

Johnson Bros. Hy. and Heavy Constrs. Inc., 6480 Wayzata Blvd., Minneapolis, Minn., CA **$1,430,840**, grading, crushed rock base, concrete pav., plant mixed bit. surf. and bridges 1.5 mi., Olmsted Co. BA 6/16. CD 6/20/61, under LB.

▲ **MINNESOTA**—State Hy. Dpt., Hy. Bldg., St. Paul, ROAD,

Johnson Bros. Hy. and Heavy Constructors, Inc., 6480 Wayzata Blvd., Minneapolis, Minn., CA **$2,006,260**, grading and bridges 11.6 mi. Pine Co. BA 6/30. CA 7/10. CD 7/6/61, under LB.

▲ **IOWA**—State Hy. Comn., Ames, Bids Opened 7/11, ROADS,

Iowa—**Arthur H. Neumann & Bros., Inc.**, 514 Hubble Bldg., Des Moines, Iowa, LB **$369,251**, grading paving 0.835 mi. Proj. I 235-2(28)80A, Polk Co.; LB **$121,563**, grading, paving 0.269 mi. Proj. I 235-2(28)80B, Polk Co.;

Iowa—**E. M. Duesenberg, Inc.**, Hy. 106W, Mason City, Iowa, LB **$356,601**, grading 8.815 mi. Proj. F 1065(1), Marshall Co.;

Iowa—**Highway Surfacers, Inc.**, New Hampton, Iowa, LB **$2,084,921**, b. conc. pavement 8.097 mi. Proj. I 80-7(8)262, Cedar Co. CD 6/28/61.

▲ **ARKANSAS**—State Hy. Dpt., State Capitol, Little Rock, ROADS,

Ark.—**Ben M. Hogan & Co.**, 1100 Fairview, Little Rock, Ark., CA **$866,493**, 11.591 mi. imprvs. on U.S. Hy. 67, Proj. 5493, Jackson and Lawrence Counties;

Ark.—**W. R. Fairchild Constr. Co., Ltd.**, Hy. 49, North By-Pass, Hattiesburg, Miss., CA **$1,568,820**, 11.132 mi. constr. on Interstate Hy. 40, Lonoke Co.;

Ark.—**E. E. Barber Constr Co.**, Fort Smith, Ark., CA **$570,689**, overpass structures at Levy, North Little Rock on Interstate 40, Proj. 6746, Pulaski Co.;

Ark.—**Foster & Creighton Co.**, American National Bank Bldg., Nashville, Tenn., CA **$1,983,817**, Markham Interchange for Interstate Hy. 30 freeway at Little Rock, Proj. 6593, Pulaski Co. Grant total $4,989,819. BA 6/28/61. CD 6/30/61 under LB.

▲† **The Elliott Co.**, Ridgway, Pa., CA **$1,559,740**, build, install two 56,000 kilowatt GENERATORS, Beaver Dam, White River, Eureka Springs, ENG-03-050-61-66, ARKANSAS. U.S. Eng., P.O. Box 867, Little Rock, Ark. BA 6/7/61. CD 6/13/61, under LB.

▲† **Winston Bros. Co.**, **Green Constr. Co.**, **Johnson, Drake & Piper, Inc.**, **American Pipe & Constr. Co.**, and **Foley Bros., Inc.**, 301 Clifton Ave. Minneapolis, Minn., CA **$5,458,823**, SPILLWAY CONSTR., Oahe Reservoir, Pierre, ENG-25-066-61-119. SOUTH DAKOTA. U. S. Eng., 215 N. 17th St., Omaha, Neb. BA 6/29/61. CD 7/6/61, under LB.

▲ **NEBRASKA**—Dpt. Rds., State Capitol, Lincoln, Zone 9, ROADS,

rejected bid June 22, 8 and 10 in. concrete pavement, b. conc., bridge, guard rail 2.2 mi. Interstate hy. between 60th and 32 streets, Omaha, Proj. I 80-9 (40), LB **$1,014,869**; paved road 0.7 mi. easterly from 72nd Street, Proj. I 80-9 (39), Omaha, LB **$321,368.** Will re-advertise. CD 6/27/61, under LB.

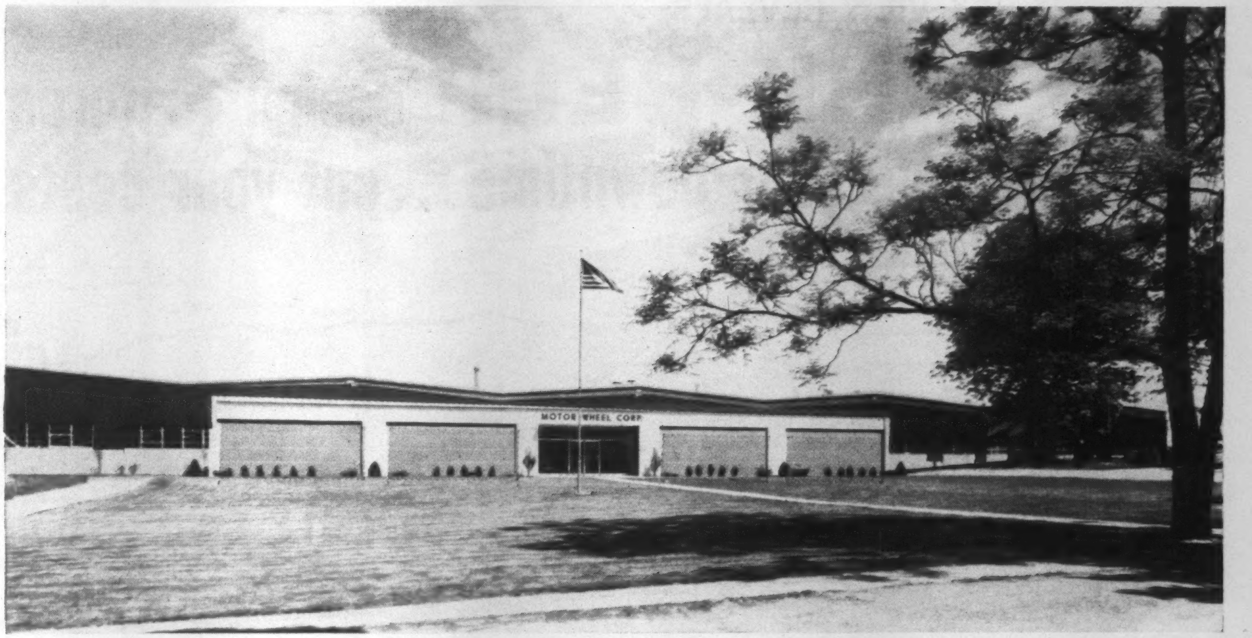
▲ **Conner Constr. Co.**, Odessa, Tex., CA **$1,125,000**, 75 mi. 6 in. CRUDE OIL LINE between Phillips Tex., and Gray, Okla.; CA **$685,500**, 85 mi. CRUDE GATHERING LINES, Camrick oil fields, Okla., TEXAS-OKLAHOMA. Phillips Petroleum Co., Bartlesville, Okla. CD 6/23/61.

▲ **United Constr. Co.**, P.O. Box 13167, Dallas, Tex., CA **$2,014,098**, est. $5,000,000, (first section) RAW WATER TRANSMISSION LINE from Iron Bridge Pump Station to Holding Reservoir, 81,000 lin. ft. 72 in. concrete water line, DALLAS, TEX. City, City Hall, Dallas, Tex. BA 6/26/61. CD 6/30/61, under LB.

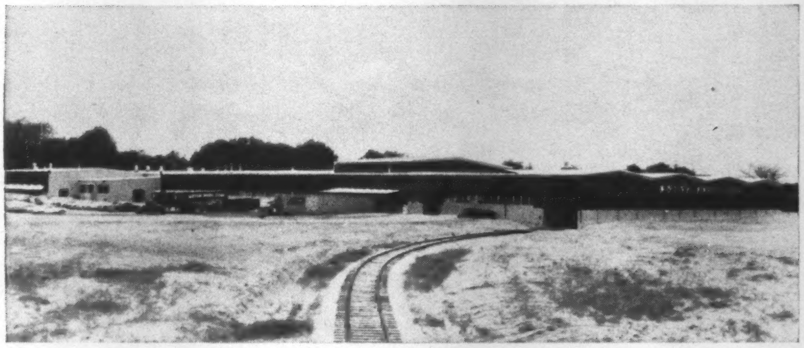
BUILDINGS—LB & CA

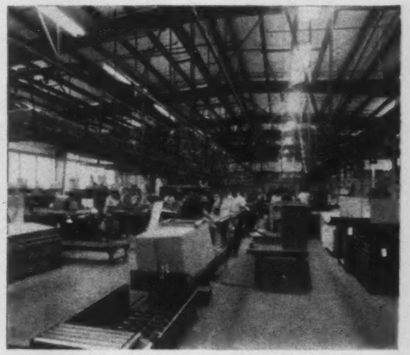
▲ **M. W. Watson, Inc.**, First National Bank of Topeka Bldg., Topeka, Kan., CA **$1,133,000**, HOSPITAL

(Continued on page 98)



The 121,000-sq.-ft. Motor Wheel Corporation building at LaGrange, Indiana, is a well designed production tool and a real asset to the community. In addition to colorful, low-profile beauty, such features as overhead offices and storage to save floor space, plenty of room for overhead equipment attached directly to the steel framing, and custom-designed facilities for shipping and receiving were specially incorporated to meet Motor Wheel's particular needs.





Custom-Designed for Manufacturing Efficiency

Versatile Stran-Steel buildings are custom-designed to meet your individual manufacturing needs perfectly. They make maximum use of mass produced pre-engineered steel components to keep costs down, quality up. The 1,400 building sizes available meet *any* design requirement, fit *any* floor plan, blend with *any* collateral material, and are so versatile, you'll *always* be able to meet increasing business requirements! What's more, these pre-engineered buildings are erected in much less time than ordinary construction. And every one is available in your choice of 10 distinctive factory-applied color-coatings for attractive and durable protection that's practically maintenance free!

Why not learn more about what Stran-Steel has to offer? You'll be especially interested in our exclusive "Building Proposal Service" and specialized finance plan. Simply mail the coupon or give your Stran-Steel dealer a call. He's in the Yellow Pages under STEEL BUILDINGS *or* BUILDINGS, STEEL.

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Buildings for Modern Business

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S Steel

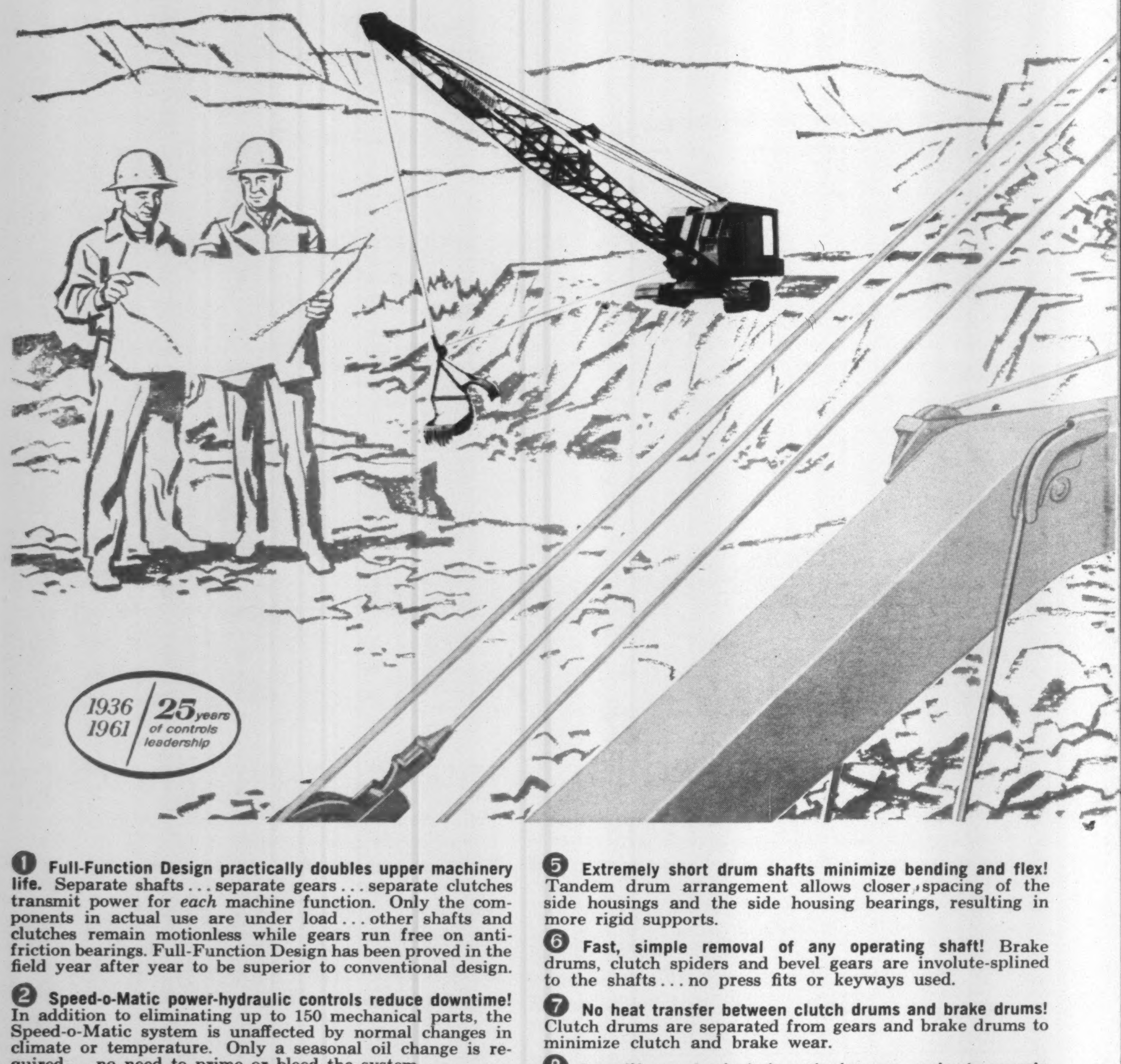
Please send complete literature on Stran-Steel Buildings in Stran-Satin Color. I'm interested in a building approximately______ ft. by______ ft. to be used for______

Name______ Title______
Company______ Phone______
Address______ County______
City______ Zone______ State______

STRAN-STEEL IS A DIVISION OF **NATIONAL STEEL CORPORATION**

X-RAY VIEW REVEALS

10 LINK-BELT design features that reduce your downtime...cut your costs



❶ **Full-Function Design practically doubles upper machinery life.** Separate shafts... separate gears... separate clutches transmit power for *each* machine function. Only the components in actual use are under load... other shafts and clutches remain motionless while gears run free on antifriction bearings. Full-Function Design has been proved in the field year after year to be superior to conventional design.

❷ **Speed-o-Matic power-hydraulic controls reduce downtime!** In addition to eliminating up to 150 mechanical parts, the Speed-o-Matic system is unaffected by normal changes in climate or temperature. Only a seasonal oil change is required... no need to prime or bleed the system.

❸ **Speed-o-Matic clutches require little operator attention!** Hydraulic cylinder pistons automatically compensate for normal lining wear, heat expansion or weather changes. Minor adjustments may be weeks, even months apart.

❹ **Clutches are interchangeable** on a given machine (including components of each) for reduced parts inventory. Located *outside* the side housings, clutches are readily accessible... can be easily pulled.

❺ **Extremely short drum shafts minimize bending and flex!** Tandem drum arrangement allows closer spacing of the side housings and the side housing bearings, resulting in more rigid supports.

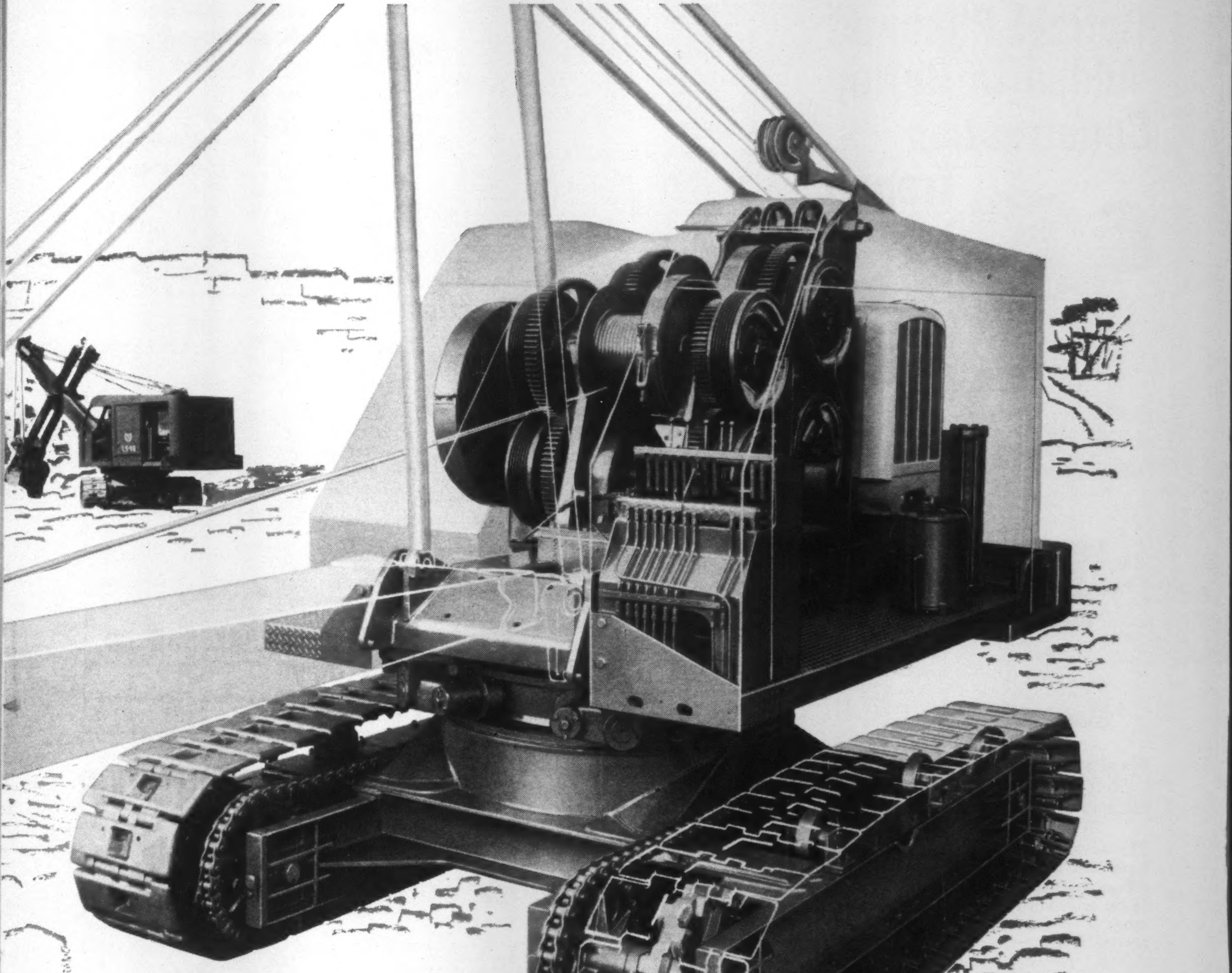
❻ **Fast, simple removal of any operating shaft!** Brake drums, clutch spiders and bevel gears are involute-splined to the shafts... no press fits or keyways used.

❼ **No heat transfer between clutch drums and brake drums!** Clutch drums are separated from gears and brake drums to minimize clutch and brake wear.

❽ **Long-life mechanical drum brakes are easier to operate and service!** Unlike brakes on some shovel-cranes, all moving parts are mounted on antifriction bearings to reduce wear.

❾ **Lower machinery fully protected against dirt and other foreign material!** Hydraulic power steering and automatic brakes are completely enclosed in a clean, flat carbody.

❿ **Adjustable, conical hook rollers** follow a true circular path... no scuffing or peening. Double flange turntable eliminates center pivot up-pull or wear-causing bind or stress.



NOTE: The entire upper machinery of the Full-Function Design models (8- to 40 ton capacity) can be field-stripped, piece by piece, without removing major portions of the cab. For fully-illustrated, descriptive literature on the various models in the Link-Belt Speeder line, see your distributor. Or write: Link-Belt Speeder Corporation, Cedar Rapids, Iowa.

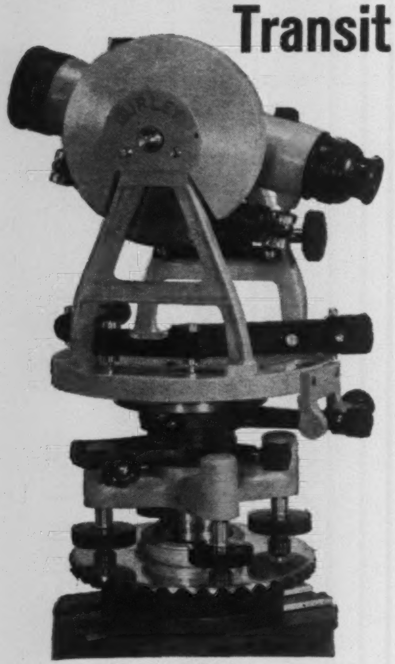
117-61N

LINK-BELT SPEEDER

21 crawlers
7 truck-cranes
3 self-propelled

It's time to compare . . . with Link-Belt Speeder

Optical Plummet Added to Gurley Construction Transit



adds:
New accuracy • New speed • New convenience
eliminates:
Lost time in centering plummet over a point
No swinging, swaying plumb bob!

The advantages of the Optical Plummet have now been added to a construction transit by Gurley. Model OP-207 is the latest addition to the line of *American-made* precision instruments for the Contractor, Engineer, Architect and Builder.

The Optical Plummet Transit can be set up in less time—at least one third. Accuracy is improved by sighting precisely on the point beneath the transit; and set-up time is much reduced.

The Optical Plummet is a telescope through the vertical center (spindle) of the transit. It points vertically when transit plate is level.

Features: The Gurley Optical Plummet telescope may be focussed from about 12 inches—for set-ups over high construction stakes—to *infinity*, for use over points far below tripod height, such as trenches, steelwork or deep excavation. To maintain verticality during the centering process, the Gurley *Shifting Head* Tripod provides not only a constant level, but approximately 1¾" of shift.

Gurley stiff-leg (or extension-leg) Shifting Head Tripod is supplied with the instrument.

See your Gurley dealer or *write for Catalog 250 describing the complete line of Instruments for the Contractor.*

W. & L. E. GURLEY
Union Plaza, Troy, N.Y.

(Continued from page 94)

ADDN., COUNCIL BLUFFS, IOWA Bd. Trustees, Jennie Edmunds Hospital, Oak and Pierce Sts., Council Bluffs, Iowa. BA 6/22/61, CA 6/22/61, CD 6/27/61, under LB.

▲ **Guaranty of Jonesboro**, Jonesboro, Ark., Owner Builds, **$2,500,000**, 200 HOUSES, Brookhaven subdivision, JONESBORO, ARK.

FAR WEST

HEAVY CONSTRUCTION—LB & CA

▲† **S & E Contractors, Inc.**, P.O. Box 2399, Dallas, Tex., LB **$1,272,000**, 112 x 325 ft. TEST PLANT, 66 ft. high, 54 x 250 ft. rein.-con. basin, 36 ft. deep, two 100 ton 100 ft. span bridge cranes, first phase S 5G REACTOR FACILITY, National Reactor Testing Station, ARCO, IDAHO. Atomic Energy Comn., Idaho Operations Office, Box 2469, Idaho Falls, Idaho. BA 6/20. CD 6/14/61.

▲ **UTAH**—State Rd. Comn., Utah State Office Bldg., Salt Lake City, Zone 14, ROAD,
Le Grand Johnson, 639 First S., Salt Lake City, Utah, CA **$1,025,567**, plant mix. bit surf. 10.828 mi. Interstate 15, Proj. I-15-8(8)361 and I-80N-5(6)44, Box Elder Co. BA 6/20/61. CD 6/27/61, under LB.

▲† **Allen M. Campbell Co.**, P.O. Box 836, Tyler, Tex., LB **$2,259,565**, est. $2,327,129 (7 bidders), MISSILE MAINTENANCE FACILITY, ENG-61-360, Spec. No. 4944, HILL AIR FORCE BASE, UTAH. U. S. Eng., 1209 8th St., Sacramento, Calif. BA 7/12/61. CD 6/28/61.

▲ **Stevenson Constr. Co.**, Altamont, Utah, LB **$1,036,-209**, est. $1,400,000, PIPE LINE Contract for ASLEY VALLEY WATER PROJECT incl. one 2 m.g. concrete reservoir, two 250,000 gal. storage reservoirs, 232,200 lin. ft. 4 to 24 in. pipe, VERNAL, UTAH. City, City Hall, Vernal, Utah. BA 6/29/61, CD 6/8/61.

▲ **NEVADA**—State Hy. Dpt., State Hy. Bldg., Carson City, ROAD,
Wells Cargo, Inc., P.O. Box 430, Las Vegas, Nev., CA **$2,736,241** (2 bidders), constr. Interstate Rte. 80 between 20 mi. northeast of Lovelock and 1½ mi. northeast of Humboldt Rte. Section 808-2, Control Sections PE-83 and PE-84, Proj. I-080-2(5)126, Contract 1102, Pershing Co. BA 7/6/61. CD 6/21/61.

▲† **Jen-Mar Constr. Co.**, 737 France Ave., North Minneapolis, Minn., CA **$1,834,000**, FALLON AIR FORCE STATION, Naval Auxiliary Air Station, FALLON, NEV. Dist. P. Wks. Office, 12th Naval Dist., Room C112, San Bruno, Calif. BA 6/7/61. CD 5/18/61.

▲† **Montgomery, Ross & Fisher, Inc., & Western Constr. Corp.**, 10835 Santa Monica Blvd., Los Angeles, Calif., CA **$1,254,500**, DORMITORIES, DINING HALL and SERVICE CLUB, Nellis Air Force Base, LAS VEGAS, NEV. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. BA 5/4/61. CD 3/22/61.

▲ **CALIFORNIA** — State Div. San Francisco Bay Toll Crossings, 151 Fremont St., San Francisco, Bids opened 7/11, BRIDGE,
Peter Kiewit Sons Co., 442 Post St., San Francisco, Calif., LB **$13,278,590**, 4½ mi. four-lane concrete trestle to replace easterly portion present two-lane San Mateo-Hayward Bridge (2nd Major stage), San Mateo and Alameda Counties. CD 6/2/61.

▲ **Fisher Contg. Co.**, P.O. Box 6306, Phoenix, Ariz., LB **$3,569,893, INTERCEPTOR SEWER NO. 4, SAN** DIEGO, CALIF. City, Rm. 161, Civic Center, San Diego 1, Calif. BA 7/11. CD 6/12/61.

BUILDINGS—LB & CA

▲ **J. B. Warrack Co.**, 400 2nd Ave. W., Seattle, Wash., LB **$1,739,000**, (8 bidders), 3 story, 42,500 sq. ft. masonry, steel frame HOSPITAL, KETCHIKAN, ALASKA. City, City Hall, Ketchikan, Alaska. BA 7/6. CD 6/5/61.

▲ **Wilson Constr. Co.**, 339 N. Canon Dr., Beverly Hills, Calif., Owner Builds, **$2,500,000**, two 4 story, 36 unit, frame, stucco APARTMENTS, 432-34-36 N. Palm Dr., BEVERLY HILLS, CALIF. Reinhart & Lesser, 13033 Ventura Blvd., Studio City, Calif., archts.

▲ **A. Von Rotz**, 40 Greenfield Ave., San Anselmo, Calif., CA **$1,086,455**, 2 story, rein.-con., structural steel Redwood HIGH SCHOOL ADDN. No. 1, LARKSPUR, CALIF. Tamalpais Union High School, Redwood High School, Larkspur, Calif. BA 6/14. CD 6/21/61, under LB.

▲ **Norman C. Toombs, Inc. & C. V. Holder, Inc.**, 18011 South LaSalle St., Gardena, Calif., LB **$4,268,762**, (6 bidders), Carson HIGH SCHOOL, 22328 S. Main St., Torrance, LOS ANGELES, CALIF. Bd. Educ., 1425 S. San Pedro St., Los Angeles, Calif. BA 7/11. CD 6/16/61.

▲† **Alcan Pacific Co.**, 1921 Stockton St., Sacramento, Calif., CA **$3,294,000**, 200 unit CAPEHART HOUSING, Naval Missile Center, Point Mugu and Point Hueneme, Spec. 36874, POINT MUGU, CALIF. 11th Naval Dist. P. Wks., 1220 Pacific Hy., San Diego 1, Calif. BA 6/14. CA 7/10. CD 6/16/61, under LB.

▲ **Nick Pokrajac**, 14427 Joanbridge, Baldwin Park, Calif., CA **$1,063,000**, John Muir HIGH SCHOOL ADDN., 1905 Lincoln Ave., PASADENA, CALIF. Pasadena Bd. Educ., 351 Hudson Ave., Pasadena, Calif. BA 6/15, CA 6/30. CD 6/20/61, under LB.

▲ **Grandview Bldg. Co.**, 470 S. Beverly Dr., Beverly Hills, Calif., CA **$1,308,000**, 73 frame, stucco DWELLINGS, various streets, Tract 24719 and Tract 22200, ROLLING HILLS, CALIF. Elkmont Land Co., 470 S. Beverly Dr., Beverly Hills, Calif.

(Continued on page 102)

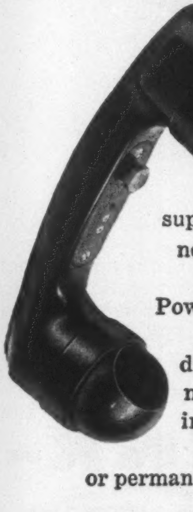
ONE Manufacturer Guarantee
DAVEY "Auto-Air" Compressors

Davey "Auto-Airs", in 85—125—160 c.f.m. models, are the only truck-mounted compressors in which compressors and power take-offs are *made* and *guaranteed* by the same manufacturer. This is only one of many reasons why Davey has more "Auto-Airs" in service today than all other manufacturers combined. Write for Bulletin E-230.

A-4029A

DAVEY COMPRESSOR CO.
Kent, Ohio
DAVEY built to serve and endure
distributors everywhere

INDOOR and OUTDOOR
PHONES
that need no current



Your voice supplies the power needed to operate these Sound Powered Telephone handsets over a distance of many miles. Never fail in an emergency. For temporary or permanent installation.

Write for catalog
HOSE-McCANN
TELEPHONE CO., INC.
25th St. & 3rd Ave., Brooklyn 32, N.Y.

Ingersoll-Rand
DRILLMASTER

York Drilling Co., Inc. drills

100,000 ft of 5" hole in 5 months

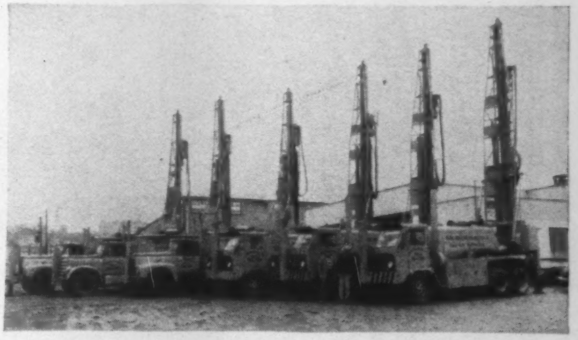
to provide crushed stone for Dulles International Airport

Four and at times five Ingersoll-Rand Drillmasters of the famous York Company have been drilling around the clock for the past 5 months putting down more than 100,000 feet of 5" hole in hard semi-granite diabase rock. Working at the quarry of the Chantilly Crushed Stone Co., Chantilly, Virginia, these completely self-contained drilling rigs have been drilling rock for the new jet-age Dulles International Airport.

These Drillmasters are part of a large fleet that has drilled 2,000,000 feet, or over 380 miles of 5", 6" and 6½" hole since 1953 in York's extensive quarrying and water-well operations. These same units drilled 449,636 feet of hole in 1959.

John W. Crerand, Vice President and General Manager of York Drilling Co., Inc., says that the Ingersoll-Rand Drillmaster is the best all-around blast-hole machine for contract drillers.

If you want to cut your blast-hole drilling costs, be sure to get the Drillmaster story. Ask your Ingersoll-Rand sales engineer for complete information.



Six of the York Drilling Company's Drillmasters—part of a fast-growing, fast-drilling fleet that has put down more than two million feet of hole since 1953, in both quarrying and water well work.

Ingersoll-Rand
179A5 11 Broadway, New York 4, N.Y.

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A CONSTANT STANDARD OF QUALITY IN EVERYTHING YOU NEED FOR DRILLING ROCK

Keep jobs moving with THERMOID

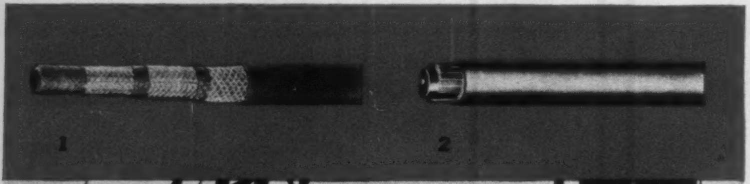
When you're moving earth and rock . . . regardless of how tough the going is . . . your Thermoid Big T distributor has a complete line of hose to help you get the job done on schedule. Immediate delivery from stock holds down-time to a minimum. Call your Big T Distributor today! He also carries a complete line of V-belts, automobile hydraulic brake parts, fluid, brake shoes, fan belts and hose. Write: Thermoid Division, 200 Whitehead Road, Trenton 6, N. J., or phone JUniper 7-3000.

Quaker Thermoid

PILE DRIVER HOSE resists oil and steam

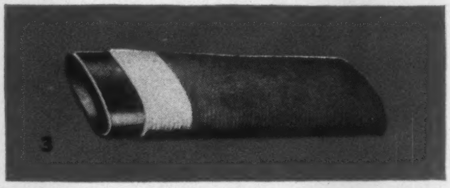
1. SUPER IRONSIDES. Wire braided for strength. Operates with maximum working pressures to 200 p.s.i. Constructed to provide maximum adhesion of tube to carcass—tube will not flake nor separate from wire braid. Withstands effects of heat, pressure, pulsation and introduction of oil to jack hammers. Easier to handle—lighter and more flexible than wrapped types. In sizes 1½" to 3".

2. SUPER EBONITE. Wrapped plies of heavy duck. Operates at working pressures to 150 lbs. Designed to resist effect of heat, pressure, pulsation and introduction of oil to jack hammers. Sizes, 1½" to 2½".



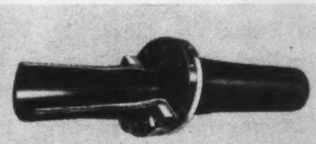
WASH DOWN UTILITY HOSE it's lightweight, yet tough

3. GENERAL DUTY HOSE for 150 psi service. Reinforced with 100% polyester fiber for increased burst-resistance. Cover resists mildew, acid fumes, abrasion and petroleum products. Tube is completely resistant to water containing mild alkalies and acids. Available in long lengths; sizes 1½", 2". 2½" and 3".



FLEXIBLE RUBBER PIPE resists corrosion and abrasion

Replaces metal pipe where corrosion, abrasion and chemical attack require frequent and expensive pipe replacement. Flexible enough to eliminate *all* elbows. Extended service life is possible by using 360° of pipe interior through regular rotation. Provides low installation cost, less maintenance, trouble-free service. Lengths to 50'; sizes 2" to 14". Pressure ratings to 250 psi. Available with duck and rubber flanges **(4)** or Thermo-lok ends **(5)** where acids or severe abrasives are present in the line.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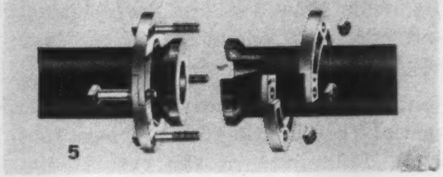
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Big T Hose

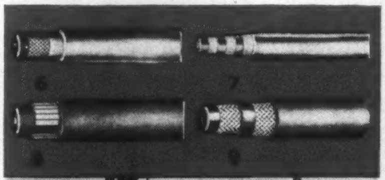
AIR HOSE to run everything from a tamper to a 6″ rock drill

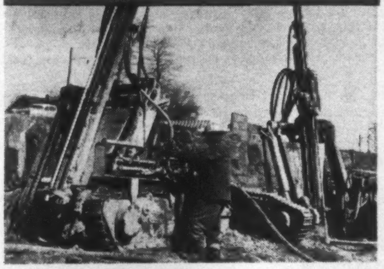
6. THUNDERBIRD. Tops for economy, durability and safety. For use with heavy air drills and pneumatic tools in the construction field. In 10 sizes from ⅜″ to 4″. Wire braid construction for high burst strength. Bright yellow cover for easy identification.

7. THERMINE. Built for rough jobs. Sturdy braids of high-tensile rayon, bonded by tight gripping friction, produces hose that won't kink or twist under pressure. In 8 sizes from ⅜″ to 2″. Working pressures to 360 p.s.i. Green neoprene cover.

8. SUPER-IRONSIDES. Designed especially for wagon drills and other heavy-duty air drills. All neoprene tube will not swell or flake under hot or oily conditions. In 11 sizes from ½″ to 3″. Has tough, red neoprene cover. Wrapped fabric construction for high burst resistance.

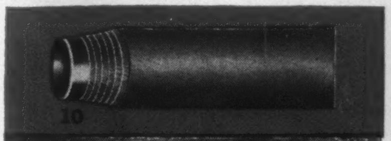
9. VERSICON. Most versatile hose made. Particularly for air-operated tools. Tube will not chip. High-strength rayon reinforcement for highest pressure requirements. Red neoprene cover. Use with water, oil, grease, solvents or sprays. In 22 sizes from $\frac{3}{16}$″ to 1½″ in long lengths.





JETTING HOSE for extended service life

10. IRONSIDES JETTING HOSE. An extremely tough, blue cover hose for high-pressure service. Wrapped rubber construction with carcass reinforced with multiple plies of heavy-duty duck and frictioned with high grade rubber compounds Tube is heavy gauge, abrasion-resistant rubber. Resistant to water containing mild acids and alkalies. In long lengths; sizes, 1½″ to 4″.



HOSE FOR SUCTION AND DISCHARGE to pump any kind of slurry

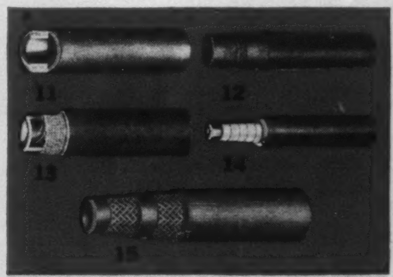
11. CONTRACTORS Smooth Bore. For suction use in sewer, foundation, trench and road construction. Constructed with plies of heavy duck and steel wire. Compounded to resist water containing alkalies and acids. Lengths to 50′; sizes to 12″.

12. REVOLC. Light, flexible suction hose. Easy to handle, yet rugged. Smooth rubber to insure maximum flow. Wire reinforced, horizontally braided. Resists kinking or crushing. Yet easily cut to any length. Lengths to 50′ in sizes from 1¼″ to 4″.

13. VICTOR CL. General purpose hose, heavy-duty suction or discharge service, up to 100 p.s.i. Withstands full vacuum and direct connection to centrifugal and piston pumps. Sizes: 1¼″ to 1½″ with molded cover; 2″ to 4″ with wrapper cover.

14. HERCULES. General discharge service at medium pressures in industry and general construction. Particularly suitable on centrifugal and diaphragm pumps. Lengths to 50′, sizes to 12″.

15. AQUAIR. A dependable, general purpose molded-type hose for medium to heavy-duty use. Very flexible and easy to handle. Available in specified lengths or 500′ reels ¼″ to 1″; 250′ reels 1¼″ to 2½″.



PORTER

THERMOID DIVISION
H. K. PORTER COMPANY, INC.
200 WHITEHEAD ROAD, TRENTON 6, NEW JERSEY

(Continued from page 98)

▲ **M. H. Golden**, 3485 Noell St., San Diego 1, Calif., CA **$1,246,960**, ENGINEER and RESEARCH BLDG., SAN DIEGO, CALIF. Convard Astronautics, 5001 Kearney Villa Rd., San Diego 1, Calif. BA 5/31. CA 7/11. CD 5/19/61.

▲ **Williams & Burrows**, 500 Harbor Blvd., Belmont, Calif., LB **$2,359,700**, (5 bidders), MARRIED STUDENTS HOUSING, SANTA BARBARA, CALIF. University of California, Goleta Campus, Santa Barbara, Calif. BA 7/11.

▲ **G. W. Davis Constr. Co.**, 2600 E. Lake Ave., Watsonville, Calif., LB **$1,204,500**, (5 bidders), Phase III, Cabrillo COLLEGE, near SANTA CRUZ, CALIF. Cabrillo College Dist., 315 Third St., Watsonville, Calif. Ernest J. Kump & Masten, Hurd & Gwathmey, 325 Lytton Ave., Palo Alto, Calif., archts. Keller & Gannon, 675 Howard St., San Francisco, Calif., engrs. CD 6/13/60.

▲ **Kent & Lawrence**, 15445 Ventura Blvd., Sherman Oaks, Calif., CA **$1,165,800**, 77 wood siding, brick veneer and frame, stucco DWELLINGS, Tract 2533, VAN NUYS, CALIF. Kentwood Homes, 15445 Ventura Blvd., Sherman Oaks, Calif. Project Planning Assoc., 3506 Sunset Blvd., Los Angeles, Calif., archts.

CANADA

BUILDINGS—SLC

▲ **Ont., Ottawa**—Bell Telephone Co. of Canada, 1050 Beaver Hall Hill, Montreal, Que., soon lets contract 5 story TELEPHONE BLDG. EXTENSION, Albert and O'Connor Sts. $2,500,000. Barott, Marshall, Merrett & Barott, 1425 Mountain St., Montreal, Que., archts. Lindley Shector, 1425 Mountain St., Montreal, Que., engr. CD 5/4/61.

HEAVY CONSTRUCTION—LB & CA

▲ **Canadian General Electric Co., Ltd.**, 175 Richmond Rd., Ottawa, Ont. CA (4 bidders), mfg. and install two ELECTRIC GENERATORS at Otter Rapids Power Development Northern Ontario, on Abitibi River, 90 mi. north of Cochrane, ONTARIO. Ontario Hydro Electric Comn., 620 University Ave., Toronto, Ont. CD 2/7/58.

▲ **Albert Elia Bldg. Co., Inc.**, 2749 Lockport Rd., Niagara Falls, N. Y., CA **$2,265,200**, Contract 5, U. S. Side TERMINAL and APPROACHES to Lewiston-Queenston Bridge, embankment, paving, drainage, roads building, pedestrian toll, customs and immigration facilities, New York, ONTARIO and NEW YORK. Niagara Falls Bridge Comn., Niagara and River Way, Niagara Falls, N. Y. BA 6/27/61. CA 7/12/61. CD 7/5/61, under LB.

▲ **Patrick Harrison & Co., Ltd.**, 2 Toronto St., Toronto, Ont., LB **$1,223,163**, (11 bidders) rein.-con. structural steel BRIDGE ROADS, SIDEWALKS, SERVICES, lighting Jane St. over CPR and CNR tracks, TORONTO, ONT. Municipality of Metropolitan Toronto, 67 Adelaide St. E., Toronto, Ont. BA 7/4/61. CD 6/14/61.

▲ **Highway Paving Co., Ltd.**, 3701 Jarry St. E., Montreal, Que., CA **$1,146,901**, 4,000 ft. RUNWAY EXTENSION, SURF. TREATMENT, Montreal International Airport, Dorval, MONTREAL, QUE. Dpt. Transport, Hunter Bldg., Ottawa, Ont. BA 6/23/61. CD 6/30/61, under LB.

▲ **J. D. Stirling Ltd.**, 2199 Jarry St. E., Montreal, Que., and **Walsh Canadian Constr. Ltd.**, Edouard VII Blvd., Brossard, Que., CA **$1,184,441**, WHARF, Sections 65 to 68, Montreal Harbour, MONTREAL, QUE. National Harbours Bd., Hunter Bldg., Ottawa, Ont. BA 6/8/61. CD 6/13/61, under LB.

▲ **YUKON TERRITORY**—Dpt. P. Wks., Sir Charles Tupper Bldg., Ottawa, Ont., ROAD,

Paul Braun's Constr. Co., Fort Whyte, Man., CA **$1,184,476**, grading, culverts, bridges, Nahanni Pioneer Rd. from Mile 65 on Watson Lake Ross River Rd. northeast abt. 80 mi. (Contract 15-61-YT). BA 7/4/61. CD 6/20/61.

BUILDINGS—LB & CA

▲ **Angus Robertson Ltd.**, 140 Wellington St., Ottawa, Ont. CA Est. **$2,000,000**, OFFICE, Albert and Metcalfe Sts., OTTAWA, ONT. The Royal Trust Co., 128 Wellington St. Ottawa, Ont. BA 5/31/61. CD 5/17/61.

▲ **G. Barker Constr. Ltd.**, 83 Commissioner Rd., RR 4, London, Ont., CA **$1,616,440**, 6 story concrete block APARTMENT, 2 story, low rent HOUSING UNITS, Scarlett Rd., TORONTO, ONT. Central Mortgage & Housing Corp., 650 Lawrence Ave. W., Toronto, Ont. BA 6/8/61. CD 6/13/61, under LB.

▲ **Dell Constr. Co., Ltd.**, 2453 Bloor St. W., Toronto, Ont. CA Est. **$1,200,000**, 1 story, 226 x 290 ft. MILK PLANT, and OFFICES, 36 x 366 ft. poured concrete, MILK COOLING WING, block fdns., TORONTO, ONT. Borden Dairy Co., Ltd., Spadina Crescent, Toronto, Ont. BA 6/14/61. CD 6/5/61.

▲ **Dineen Constr. Co., Ltd.**, 55 York St., Toronto, Ont., LB Est. **$1,250,000**, (12 bidders), first stage, AIRPORT HOTEL, Dixon Rd. and Renforth Dr., TORONTO, ONT. Renforth Developments Ltd. c/o Bregman & Hamann, archts., 130 Bloor St. W., Toronto, Ont. BA 7/6/61. CD 6/26/61.

▲ **La Societe d'Enterprises Generales Ltee**, 13 rue Gouin, Amos, Que., CA **$1,450,000**, (10 bidders), 3 story, HOSPITAL, NURSES RESIDENCE, CHAPEL CHIBOUGAMAU, QUE. Corp de L'Hopital Chibougamau, Inc., c/o Siscoe, Chibougamau, Que. Roland Dupere, 1279 Blvd. Charest Quest, Que. BA 6/21/61. CD 5/31/61.

PUERTO RICO

HEAVY CONSTRUCTION—LB & CA

▲† **United States Underseas Cable Corp. (Phelps Dodge Copper Products Corp.)**, 300 Park Ave., New York, N. Y., U. S. A. and **Felton & Guilleaume**, West Germany, CA Est. **$5,000,000**, design and construct 700 mi. UNDERWATER COMMUNICATIONS NETWORK from Turks Island, Jamaica to Ramey Air Force Base, Puerto Rico, Puerto Rico to Antigua, PUERTO RICO-ANTIGUA and JAMAICA. U. S. Eng., (Missile Test Center) Cape Canaveral, Cocoa, Fla., U. S. A.

AMERICANS ABROAD

BUILDINGS—LB & CA

▲ **Allis Chalmers Co.**, 1126 S. 70, Milwaukee, Wis., U. S. A. CA Est. total cost **$4,000,000**. FLOUR MILL, LAGOS, NIGERIA. Flour Mills of Nigeria, Ltd., Apapa, Lagos, Nigeria. Brown Engineers, 10 Columbus Circle, New York, N. Y. U. S. A., archts.-engrs.

LATIN AMERICA

HEAVY CONSTRUCTION—LB & CA

▲ **ARGENTINA**—National Hy. Bureau, Buenos Aires, ROADS,

Argentina—**Societe Des Grands Travaux De Marseille**, Malabia 2373, Buenos Aires, Argentina, CA **$1,614,469** basic work and paving A-44 kilometer section Guamini-Trenque Lauquen and access Routes to Casbas on Hy. 33.

Argentina—**Polledo, S. A. Constructora Y Financiera, Perales Aguiar and Cia. S.R. I 1., "Sisplatina", S.A. and Fernando Meijides, S.R.L, Venezuela** 736, Buenos Aires, Argentina, CA **$1,148,300**, basic and paving works, 705 kilometers hys. 35 and 188.

BUILDINGS—LB & CA

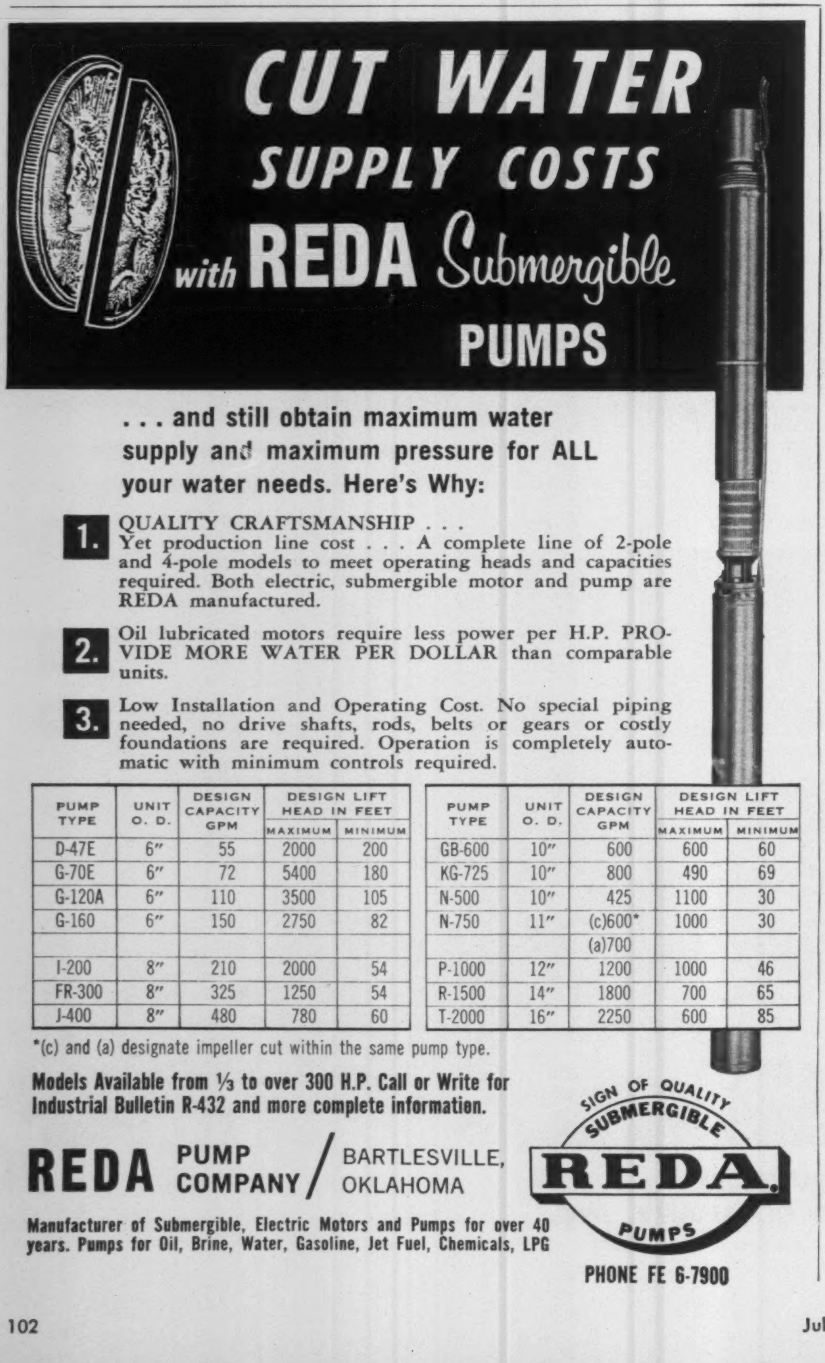
▲ **Kaiser Engineers, International**, 300 Lakeside Dr., Oakland 12, Calif., U.S.A., CA design and construct CRUSHING, CONSENTRATING, SMELTING and REFINING PLANT at Copper mine, RANCAGUA, CHILE. Braden Cooper Co., Santiago, Chile.

FOREIGN

HEAVY CONSTRUCTION—LB & CA

▲ **Impresit Girola Lodigiani**, Milan, Italy, CA Est. **$60,000,000** Roreires, DAM, on Blue Nile at Damazin Rapids, SUDAN. Ministry of Irrigation and Hydro Electric Power, P.O. Box 878, Khartoum, Sudan. CD 6/13/60.

(Proposal Advertisements see pp. 114 to 118)



CUT WATER SUPPLY COSTS with REDA Submergible PUMPS

. . . and still obtain maximum water supply and maximum pressure for ALL your water needs. Here's Why:

1. QUALITY CRAFTSMANSHIP . . . Yet production line cost . . . A complete line of 2-pole and 4-pole models to meet operating heads and capacities required. Both electric, submergible motor and pump are REDA manufactured.

2. Oil lubricated motors require less power per H.P. PROVIDE MORE WATER PER DOLLAR than comparable units.

3. Low Installation and Operating Cost. No special piping needed, no drive shafts, rods, belts or gears or costly foundations are required. Operation is completely automatic with minimum controls required.

PUMP TYPE	UNIT O. D.	DESIGN CAPACITY GPM	DESIGN LIFT HEAD IN FEET	
			MAXIMUM	MINIMUM
D-47E	6″	55	2000	200
G-70E	6″	72	5400	180
G-120A	6″	110	3500	105
G-160	6″	150	2750	82
I-200	8″	210	2000	54
FR-300	8″	325	1250	54
J-400	8″	480	780	60

PUMP TYPE	UNIT O. D.	DESIGN CAPACITY GPM	DESIGN LIFT HEAD IN FEET	
			MAXIMUM	MINIMUM
GB-600	10″	600	600	60
KG-725	10″	800	490	69
N-500	10″	425	1100	30
N-750	11″	(c)600*	1000	30
		(a)700		
P-1000	12″	1200	1000	46
R-1500	14″	1800	700	65
T-2000	16″	2250	600	85

*(c) and (a) designate impeller cut within the same pump type.

Models Available from ⅓ to over 300 H.P. Call or Write for Industrial Bulletin R-432 and more complete information.

REDA PUMP COMPANY / BARTLESVILLE, OKLAHOMA

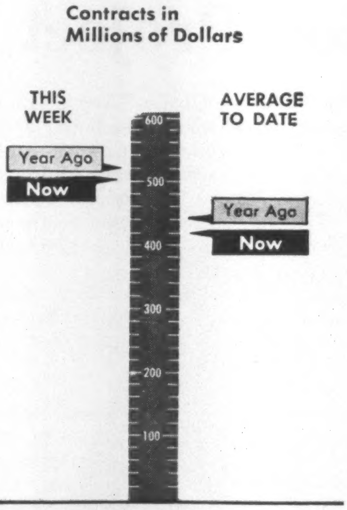
Manufacturer of Submergible, Electric Motors and Pumps for over 40 years. Pumps for Oil, Brine, Water, Gasoline, Jet Fuel, Chemicals, LPG

SIGN OF QUALITY SUBMERGIBLE REDA PUMPS

PHONE FE 6-7900

Construction Scoreboard

This Week . . .



AMOUNT OF CONTRACTS LET

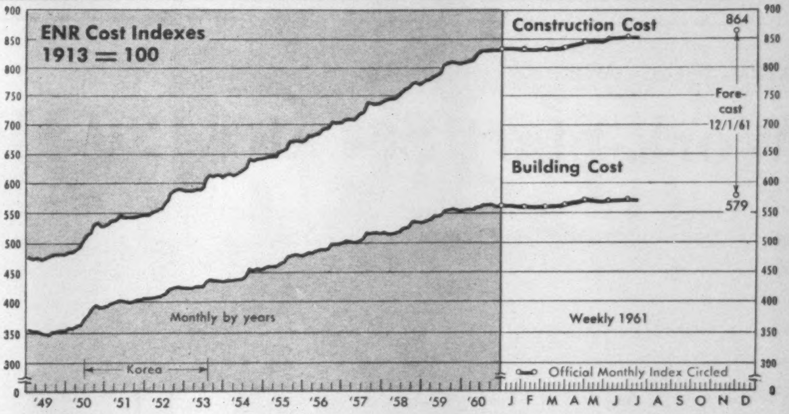
Contracts Awarded In 50 States By Type	This Week	Cum. 29 wks 1961	Cum. 29 wks Chge '60-'61
	millions		%
All Heavy Construction	$509.5	$12,413.2	— 3
By Ownership			
PRIVATE	202.5	6,027.1	−11
PUBLIC	307.0	6,386.1	+ 6
State & Municipal	220.8	4,795.2	+ 6
Federal	86.2	1,590.9	+ 8
By Type of Work			
PUBLIC			
Waterworks	6.8	218.9	−23
Sewerage	12.7	408.5	+21
Bridges*	9.6	356.3	−20
Highways	91.7	2,091.0	+12
Earthwork, Dams & Waterways	15.3	519.9	+10
Buildings:			
Excl. Housing	56.6	1,522.6	+10
Housing	45.3	488.3	+40
Unclassified	69.0	780.9	−10
PRIVATE			
Buildings:			
Mass Housing	112.4	2,698.3	−18
Commercial	47.7	1,463.1	+ 7
Industrial	32.1	1,616.6	+ 5
Unclassified	10.3	248.8	−55

*Includes Private bridges

NOTE: Minimum size projects included are: Waterworks and waterways, $53,000; other public works, $88,000; industrial buildings, $110,000; other buildings, $400,000.

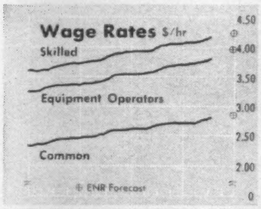
NEW CONSTRUCTION CAPITAL

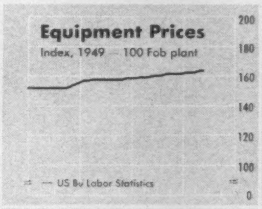
	Week of July 13	Cum. 28 wks 1961	Cum. 28 wks Chge '60-'61
	millions		%
Corporate Securities	$ 10.2	$1,967.6	+19
State and Municipal:			
All Except Housing	85.8	3,792.1	— 2
Housing	0	31.3	−83
Federal Loans	13.7	183.7	+74
Federal Aid	0	0	−100
Total Nonfederal	$109.6	$5,974.7	−30
Federal Appropriations:			
Projects in U. S.	0	1.0	−99.7
Outside U. S.	0	0	−100
Total New Capital	$109.6	$5,975.7	−32

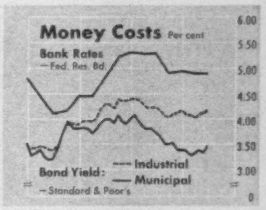


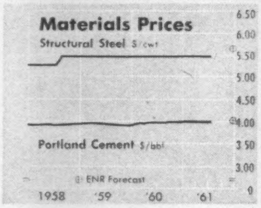
ENR INDEXES (1913=100), 20-cities' average	Week of July 13 1961	% Change from June 15 1961	% Change from July 14 1960
Construction Cost	853.31	+0.2	+2.7
Building Cost	571.40	+0.1	+1.9

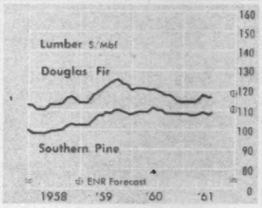
To convert above indexes to 1926 = 100: Divide Construction Cost by 2.080; Building Cost by 1.850.
1949 = 100: Divide Construction Cost by 4.770; Building Cost by 3.518.

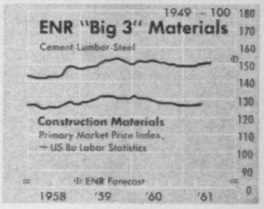












MATERIALS SHIPMENTS

		1961 May (M) Apr. (A)	1961 Cum. (No. of Mos.)	% Chg. from Year Ago Mo.	% Chg. from Year Ago Cum.
Portland Cement, Bur Mines	thous bbls	31,030(M)	106,241(5)	+ 3	+ 4
Concrete Paving Awards, PCA	thous sq yd	10,482(M)	44,746(5)	+ 9	+13
Fabricated Structural Steel	thous tons	365(M)	1,498(5)	+14	+ 3
Bookings, AISC	thous tons	392(M)	1,561(5)	+30	− 5
Reinforcing Bars, Net, AISI	thous tons	220(M)	928(5)	+14	+12
Lumber, total NLMA	mil fbm	3,065(M)	13,208(5)	− 4	−10
Production, total	mil fbm	3,005(M)	12,833(5)	− 6	−14
Orders, total	mil fbm	2,881(M)	13,543(5)	− 5	− 6
Douglas Fir	mil fbm	687(M)	3,263(5)	− 2	− 5
Southern Pine	mil fbm	591(M)	2,765(5)	+ 1	+ 3
Unfilled Orders, Douglas Fir	mil fbm	491(M)	495(5)*	− 7	−22*
Southern Pine	mil fbm	256(M)	246(5)*	+16	+21*
Clay Products, Bureau of Census					
Brick, Unglazed, Common, Face	mil bri	534p(A)	1,681p(4)	−17	− 4
Vitrified Clay Sewer Pipe	thous tons	148p(A)	481p(4)	−16	− 5
Structural Tile, Unglazed	thous tons	41p(A)	136p(4)	−17	−11
Asphalt Products, Bureau of Census					
Asphalt Roofing	thous sales sqs	4,709p(A)	12,207p(4)	+16	−12
Asphalt Siding	thous sales sqs	64p(A)	208(4)	+31	− 5
Aluminum, Wrought, Net, Bur Census					
Sheet and Plate (non-heat treatable	mil lbs	99(A)	389(4)	−0.3	− 4
Wire and Cable	mil lbs	24(A)	101(4)	+ 1	+ 7
Extruded Shapes (soft alloys)	mil lbs	65(A)	253(4)	+0.02	− 5

EMPLOYMENT AND FAILURES

Contract Const Employment, BLS	thous	2,804(M)	3,103(5)*	− 1	−0.5*
Contractor Failures, Dun & Bradstreet					
Number		255(M)	1,247(5)	+19	+17
Liabilities	thous	$19,162(M)	$78,746(5)	+76	+18

* Average per month p=preliminary figures

After three years of planning . . .

Work-Start Set at $120-Million Project

Baltimore's 22-acre Charles Center redevelopment project—in planning since early 1958—may take shape next year.

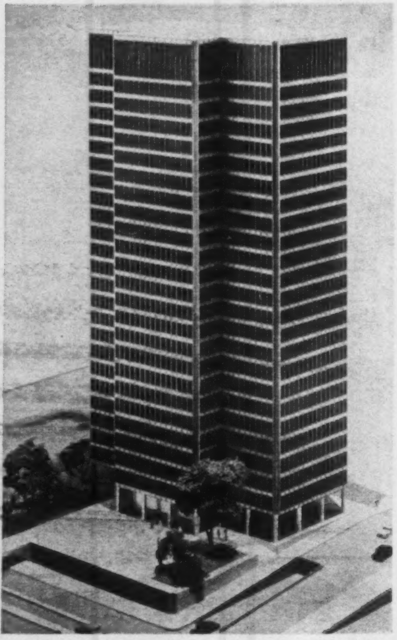
Construction is expected to start then on the first office building in the area—a 23-story, $12-million, curtain-wall structure designed by Ludwig Mies van der Rohe.

A financing commitment of more than $9 million came from an unidentified life insurance company, according to Bernard Weissbourd, president of Metropolitan Structures, Inc. of Chicago, the development company.

The glass and aluminum structure will contain 275,000 sq ft of office space and 30,000 sq ft of retail-store area, plus underground parking for about 120 cars.

Contractor for the building is Metropolitan Builders, Inc., a firm owned by the development corporation. Consulting architects are Emery Roth & Sons, New York City.

Expenditures for buildings could ultimately hit $120 million in the development. Millions more probably will be spent for construction in areas bordering the redevelopment tract.



FIRST of a group for Baltimore.

One such peripheral project just went to the drawing board. Jacob Blaustein, one of the five unsuccessful bidders for the site on which the Mies structure will rise, plans construction of a $12-million office building across from Charles Center. This projected 28-story building will be erected by McCloskey & Co., Philadelphia contracting company.

In addition to the privately financed office building, Charles Center will also contain an $11.3-million hotel, a $12-million underground parking garage, $15 million worth of retail commercial structures, about $43 million worth of office buildings in addition to the one already scheduled and a $24-million federal building.

Architectural design work started some time ago on the federal building, which will occupy a 2.3-acre site in the center.

Officials say occupants of existing buildings now on the federal building site received notices to vacate by January 1962, with a construction-start scheduled for the following June. Completion of this building is expected in 1964.

Local officials still have a big land-acquisition job ahead before the entire 22 acres become eligible for the onslaught of bulldozers. The tract consists of about 216 land parcels of which 155 remain to be acquired.

Others involved in the first Charles Center building in addition to Ludwig Mies van der Rohe and Emery Roth & Sons are Consentini Associates, New York City, mechanical engineers; Farkas & Barron, New York City, structural engineers; Joseph S. Wood & Associates, soils engineers, and Curtis and Davis, New Orleans, interior architectural design.

Because of a road construction job . . .

County Faces $8-Million Land-Slip Suits

A superior court judge blames Los Angeles County roadbuilding activities for land slippage that damaged and destroyed more than 150 houses in a development near Los Angeles.

The decision by Judge Philip H. Richards lays the county open to damage suits that may total over $8 million.

The case involves the 200-acre Portuguese Bend development on Palos Verdes Peninsula, which is located about 25 miles southwest of Los Angeles (ENR Feb. 16, p. 112).

Since August 1956 the land has been creeping toward the Pacific Ocean, carrying with it private homes and a clubhouse.

Until 1958, earth slipped at an estimated rate of 1¼ in. every 24 hours. Since then movement has been at a rate of about three-eighths of an inch every 24 hours.

In a 101-page opinion Judge Richards found that work connected with the extension of an existing road triggered the massive land-slip. The job involved cutting of hillside areas and the removal of about 235,000 tons of earth, which were then used as fill in and around so-called Crenshaw Canyon. The added pressure from the filled areas brought about the slippage, Judge Richards says. He reasoned that since the earth movement was greatest at the top of the hilly terrain sloping toward the ocean, the added weight of the fill set off the slide. On this point, he held with opinions of engineering and geological experts who testified for land owners and home owners.

He rejected the theory of experts for the county that watering of shrubbery and septic tanks used by home owners provided lubricants on which the already unstable section of the peninsula started to move.

His decision also rejects a cross-complaint by the county seeking $1 million in damages from Palos Verdes Properties, a land development firm. The county charged the development group with damage to two roads as a result of the land slippage.

POWER REASONS

WHY GMCs ARE THE MOST ADVANCED CONSTRUCTION TRUCKS IN 20 YEARS

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● Greatest
performance
exclusive au
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From ½-ton to 60-ton
General Motors leads the way!

THE
TRUCK
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OF THE
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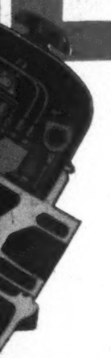
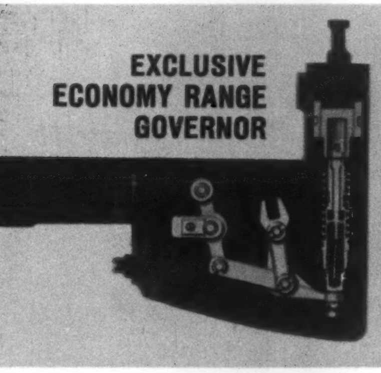
MC V-6 ESELS

SHORTEST, LIGHTEST AND LEAST EXPENSIVE TO OWN—IN THEIR CLASS!



You get rugged, compact construction . . . many inches shorter for more inside cab room, simpler servicing and full advantage of short BBC dimensions—lightest weight, up to 530 pounds less, to carry bonus payloads—two-cycle design for faster acceleration, smoother power, exceptional fuel economy and added life.

EXCLUSIVE ECONOMY RANGE GOVERNOR



Only GMC diesels have this economy range governor that positively regulates engine speed at the most efficient rpm for top fuel economy and longer engine life. Standard equipment on 4-wheelers.

BIG PULLING POWER!
HIGH PERFORMANCE!
6V-71 GMC TRUCK DIESELS

MAX. TORQUE
604 @ 1200

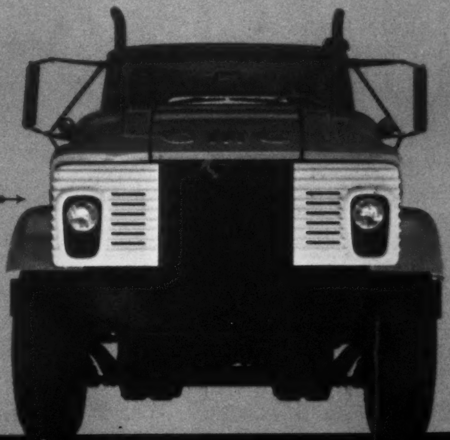
MAX. HORSEPOWER
197 @ 1800
to
218 @ 2100

Ratings are at sea level and 60°F.

atest combustion efficiency with maximum air intake from Roots-type blower ● Better high-altitude
mance than naturally aspirated engines ● Save up to 5% on fuel, get up to 12 extra horsepower with
ive automatic hydraulic fan ● Four exhaust valves for each cylinder (not just 1 or 2) assure more
ete exhaust scavenging, give a cooler-running engine, lengthen valve life and provide more com-
fuel combustion ● Replaceable dry-type cylinder liners are leak-proof, quick and easy to service.

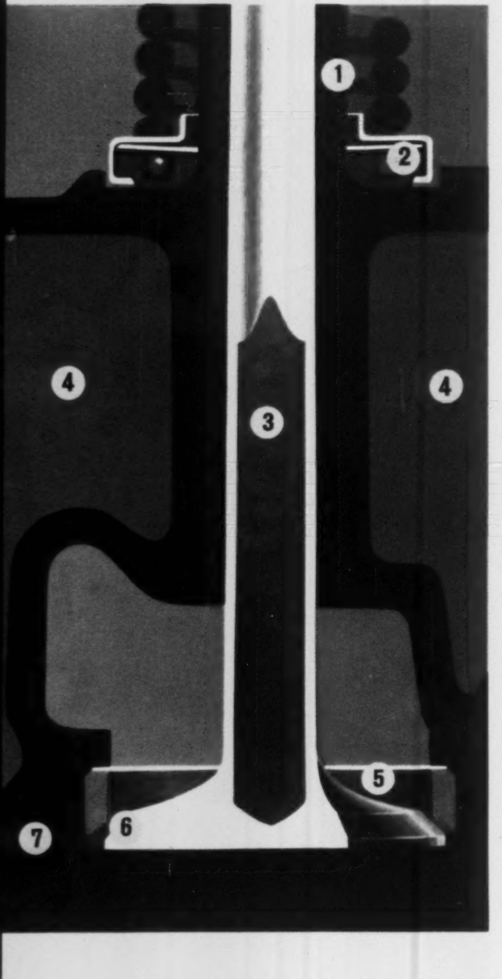
← **218 hp. V-6 Diesel Engine Is Right Out In The Open** with the cab tilted. Other features of GMC steel tilt-cabs are: 72" BBC and 52" front axle location for big loads; biggest safety vision you can get; sharper turning angles; job-matched diesel power from 32,000 lbs. GVW to 76,800 lbs. GCW.

GMC's Biggest, Diesel-Powered 60-ton Tractor—DBW9000 Series with 90" BBC and 28-inch front axle location for biggest legal loads. Conventional Ninety-Inchers, with V-6 diesels, are ideally suited to all construction jobs from 30,000 lbs. GVW. →



EXCLUSIVE GMC ENGINES ARE BUILT TO

Short, Stout Design! Low-Rpm Power! GMC V-6s have exclusive long-life strength. Deep-skirted block has extra-reinforcing ribs and structural superiority throughout. Full-power at low engine speed and shortest stroke of any comparable truck-built engines reduce power-robbing wear, add to greater fuel economy and provide the desired, higher performance.



Cooler-Running, Stronger, Bigger Valves... Everything For Longer Life!

1 Extra-long valve guides, integral with head, minimize stem exposure to burning gases and assure faster transfer of heat. **2** Positive rotation of both intake and exhaust valves (except 305A) give valves self-cleaning action to prevent sticking, pitting, warping, leaking and burning. **3** Valve stems are short and big diameter to practically eliminate distortion. Sodium-filled exhaust valves* more rapidly transmit damaging heat through the valve guides to the coolant. **4** Up to 176 gallons of coolant circulating every minute (over twice as much as many competitive engines) provide the flow necessary for life-prolonging heat transfer. **5** Hard, tough, special steel is used in the exhaust valve seat inserts of heavy-duty V-6 engines to withstand high temperatures and constant seating action. **6** Valve heads and ports are extremely large for better breathing. Special hard facing resists pitting, corrosion, fatigue and wear. **7** Wide bridge between valves provides added strength and big cooling areas for better heat dissipation. *(Except 305s)

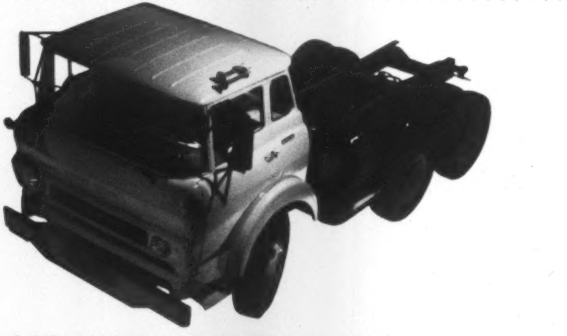
HERE'S YOUR COMPLETE CHOICE OF EXCLUSIVE GMC V-6 GAS ENGINES

MODEL	GROSS TORQUE RANGE	MAX. HP.
305A	258-260 @ 1400-2200	150 @ 3600
305B	264-266 @ 1100-2000	150 @ 3600
305C & D	268-270 @ 1200-2100	165 @ 3800
351	308-312 @ 1400-2400	180 @ 3400
401	375-377 @ 1200-2000	210 @ 3400

Lower Maintenance Costs! Adjustments, repairs and replacements are easier and less costly with GMC engines. For example—spark plugs are conveniently located inside the V. Self-locking screws make valve lash adjustments a simple job. Most major parts are interchangeable between V-6 engine models, and several with Twin-Six engines. Expert service and all parts are readily available at GMC Truck Dealers located across the country.

☆☆☆

Low Buying Cost! Low Owning Cost! That's the new GMC 105" BBC Conventional 6-wheelers with 105" BBC cab, 351 or 401 V-6s. Servicing is convenient with wide hood and roomy engine compartment. Easy-in-and-out conventional cab trucks start with choice of 34 pickup combinations and go up to 60,000 lbs. GCW tractors.

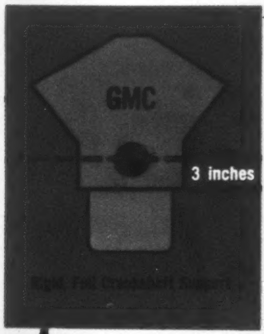


Out-Earns, Out-Pulls All Trucks In Its Class . . . GMC steel tilt-cabs with exclusive 275 hp. Twin-Six. These easy-to-service, easy-to-drive models with 72" BBC and 52" front axle placement are also available with GMC V-6 engines. Full line, 19,500 lbs. GVW to 76,800 lbs. GCW, cannot be surpassed on any construction haul.

FOR ALL THE PROFIT-FACTS, CONTACT YOUR GMC DEALER LISTED IN THE YELLOW PAGES OR V

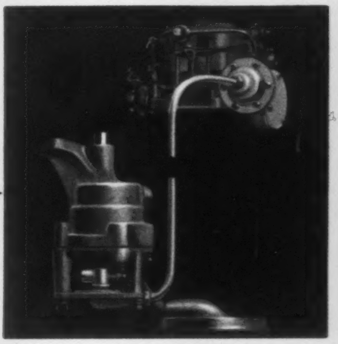
O OUT-LAST, OUT-POWER OTHER GAS ENGINES!

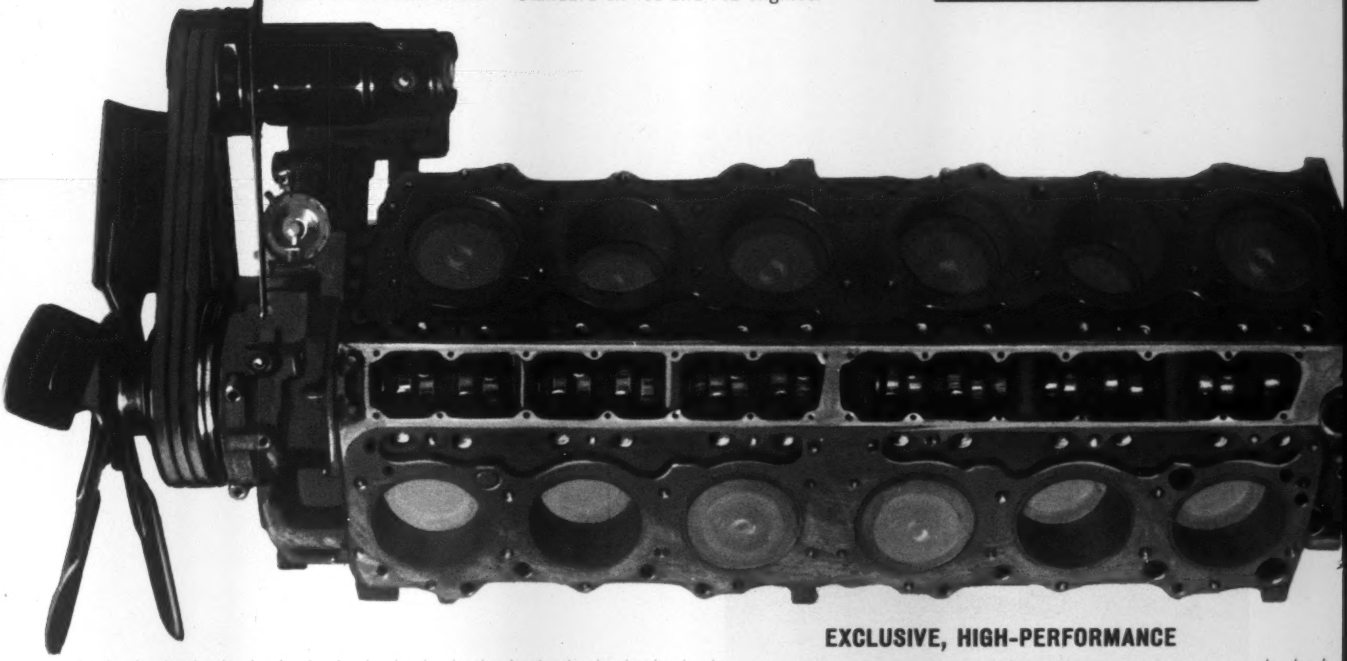
Greatest Pulling Power Of All! This 702 cu. in. Twin-Six gas engine produces the most usable power of any standard equipment engine. You get great reserve power at low engine speed to haul loads at part throttle under normal conditions . . . using reserve only for hills. You save fuel, reduce shifting up to 60% and get longer engine life.



Notice The Full 3-Inch Extended GMC Skirt for the most rigid, full crankshaft support. New compact design, extra strong inner ribbing and staggered cylinders all increase strength and rigidity, decrease costly wear and failures.

Tamper-Proof, Positive Speed Control Governor! This GMC patented hydraulic governor operates by direct oil pump pressure to accurately, reliably control proper operating speeds . . . adds to engine life. Standard on 401 and 702 engines.

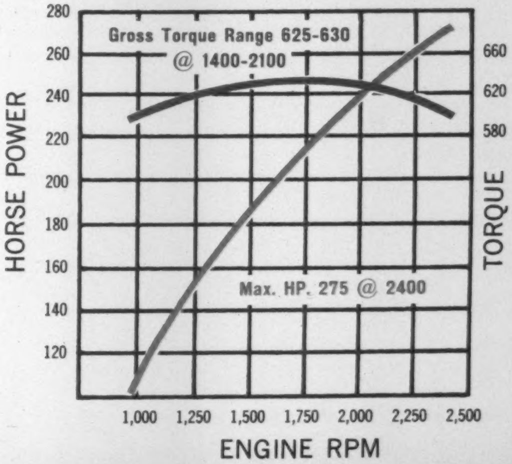




* * *

Exclusive V-6 Power is standard in medium-heavy duty 90" Conventionals along with easy-driving independent front suspension and easy-riding vari-rate rear springs on 4-wheel models. Ruggedly reinforced cabs with double-walls stand up on the roughest construction jobs. Heavy-duty models have the powerful Twin-Six.

EXCLUSIVE, HIGH-PERFORMANCE GMC TWIN-SIX



OR VISIT ANY CONTRACTORS USING NEW GMC TRUCKS.

Missile Decision Is Pending

Ruling expected this week on cable dispute. Second panel studies problem of "uneconomical practices."

Late this week, the Kennedy Administration's Missile Sites Labor Commission is slated to make its first critical ruling on a major labor problem at the nation's missile bases.

The test case involves a jurisdictional contest between the International Brotherhood of Electrical Workers and the International Union of Operating Engineers.

The job dispute between the two unions—over an assignment for laying cable—centers at the Walker Air Force Base at Roswell, N. M. The issue is also prominent at other missile bases.

This jurisdictional dispute and another important missile-base labor problem—uneconomical labor practices—are the first two subjects the Commission will tackle. The Commission heard reports last week on the problems by special panels set up to make recommendations for solution. Labor Secretary Arthur Goldberg heads the Commission.

Whatever award is made in the IBEW-Operating Engineers case "will concern only the missile sites, without prejudice to parties in their jurisdictional dispute elsewhere," says Julius E. Kuczma, executive secretary of the Commission.

The recommendation, made by panel members John Dunlop, head of the Construction Industry Joint Conference; C. J. Haggerty, president of the AFL-CIO Building Trades Department, and James D. Marshall, executive director of the Associated General Contractors, is expected to get backing from the Commission.

Discussion of "uneconomical practices" centered last week on three issues involving contracts between contractors and labor unions: "Pyramiding" premium pay, travel and subsistence pay, and premium pay for hazardous work. The panel assigned to this subject includes the members of the jurisdictional group as well as arbitrator David Cole and Walter Reuther of the United Auto Workers.

One problem facing the second group is how to handle contracts already agreed to between contractors and labor unions that contain, in the Commission's view, uneconomical practices. It was noted, in the discussions, that a union might have the right to sue in court for breach of contract if an employer, ordered by the Commission to disallow certain payments, sought to comply with the order.

The Commission, so far, works successfully in a number of areas. Mr. Kuczma noted that voluntary agreements are being worked out with the international unions to forestall contracts that are "obviously uneconomical."

With Missile Site Labor Committees now established at 20 ICBM bases, the labor problems that crop up are "being ironed out," Mr. Kuczma said. "There's a consciousness of being policed," he added. "These fellows now know there's a place to go to get their problems solved."

The local-level Missile Site Committees were set up at the various bases earlier this month, ranging in size from more than 20 members down to much smaller ones. The committees include officials of contracting agencies, building trades unions, industrial unions, contractors and missile manufacturers.

The task of the local committees is mainly to forestall labor troubles by keeping a close check on labor-management practices in missile work. When a particular dispute does break out, the Missile Commission is authorized to name a special panel at the site to take up the particular case.

Complicated Strike Settled in Toronto

Toronto, Canada, is just beginning to recover from a chaotic, six-week strike that crippled housing construction and harassed industrial and public projects.

The trouble began over a year ago. It centered around the alleged exploitation of immigrant construction workers.

Union sympathizers felt that the immigrant workers (mostly Italian), who make up the bulk of the residential labor force, were underpaid and shoddily treated. Impatient with the indifference of unions in commercial construction, they formed a new group—called the Brandon Union Group—and proceeded to organize the immigrants after five Italian workers died in a tunnel collapse reportedly caused by safety code violations.

Many of the contractors were forced to sign labor contracts. The unions claim that employers have violated the agreements. And contractors freely concede this, claiming they cannot compete with nonunion firms.

Late in May, the immigrant construction workers held a mass rally and endorsed a strike call to enforce the agreements. The Toronto Building Trades Council, representing the commercial construction unions, pledged its support. The council subsequently voted a general strike to support the housing workers, but this was later recinded and the commercial workers pledged, instead, to give an hour's pay a week to support the strike.

By the end of May, major apartment construction in Toronto was shut down. Union attention then turned to housing subdivisions. Violence flared, leading to the arrest of 83 union members.

The strike fanned out to tunneling operations for a subway project, because subway contractors accepted deliveries of ready-mix from firms that ignored picket lines on housing projects. Work on the subway was completely stopped, creating another dispute over whether cessation of tunnel work endangered the foundations of the Ontario Provincial Parliament Buildings that stand above. Subway contractors have sued for damages and an injunction.

Meanwhile, a number of commercial projects were hit by sympathy strikes that were finally called off on July 5.

Following failure of efforts to settle the dispute by arbitration in June, a special commissioner was appointed to search for a solution. An agreement ending the housing strike was reached last weekend. The terms were not immediately made public.

The strikes involved more than 7,500 construction workers.

Unions Continue Strong Demands

Long-term contracts and annual pay boosts of 15 cents or more are common as some strikes drag on

Long-term contracts and sizable wage increases continue to be the order of the day in construction bargaining. Hiring hall hassles, selective strikes, "lockout" disputes and resistance to arbitration still plague the industry.

Nearly all the settlements reported since mid-year are for terms of more than a year. Many of them will run for three years or more.

Carpenters in Kingston, N. Y., for example, have settled for a four-year, 80-cent pact. Los Angeles sheet metal workers have signed for 91 cents over the next four years. And in Birmingham, Ala., four of the trades have gone to three-year contracts for the first time in their history. Two of the Birmingham unions—teamsters and operating engineers—hedged with reopener clauses for the third year. But carpenters and laborers settled for fixed, automatic increases totaling 40 and 35 cents, respectively.

Strikes ranging from a few days to 10 weeks preceded a number of the recent settlements.

New York City's billion-dollar construction industry, still in the throes of an ironworker and teamster (ready-mix, sand and gravel) strike last week, pulled out of a teamster (building material) stoppage with a two-year, 32-cent settlement. And it ended a 10-week house wreckers' strike with a 26-month, 55-cent pact.

Laborers in Des Moines, Iowa, went back to work for 45 cents over the next three years but lost their demand for an exclusive hiring hall. Operating engineers in the Philadelphia area ended an eight-week strike after winning a two-year, 40-cent pact that contains (over the protest of employers) a union hiring hall clause with a 90-day recall provision.

Two more strikes in Hartford, Conn. were settled in less than a week. The plumbers and steamfitters took a two-year, 40-cent package and the bricklayers a three-year, 45-cent settlement. The bricklayers, incidentally, retained a travel allowance provision that the employers had tried to cancel.

Electrical workers in Albany, N. Y., won 40 cents over the next two years after a six-day strike. And bricklayers in Kingston, N. Y., got a 17-cent wage increase after a 21-day strike. The bricklayers also won a 40-hour workweek guarantee.

Two of the more interesting strikes still brewing last week involved an electrical workers' arbitration dispute in Baltimore and selective strike tactics by operating engineers in Oregon.

The Baltimore electricians, bucking contractor demands and mandate of their international union, refuse to be bound by the traditional procedure of submitting disputes to the electrical industry's Joint Council on Industrial Relations. A federal court decided in May that such a clause in the old contract did not create a perpetual agreement and did not preclude termination of the contract by the union. The Baltimore local refuses to negotiate such an agreement again.

In Oregon and southwest Washington, the operating engineers have slowed or halted many projects by an old tactic—selective or spot striking. The Portland Associated General Contractors initially urged its members to lay off all members of the striking union but later withdrew the plea.

Meanwhile, Atlanta, Ga., has been hit by a multimillion-dollar tie-up following the breakdown of AGC negotiations with six basic trades. After the operating engineers walked out, the AGC urged its members to halt work on all union jobs. The action immediately brought a formal charge of "lockout" from the plumbers and steamfitters. AGC later reversed its stand.

Elsewhere, 2,000 plumbers have struck in three counties south of San Francisco. They are seeking, among other things, travel pay for shorter distances and the hiring of more foremen. And in Dallas, 700 striking plumbers and steamfitters have been pushing for a 30-hour workweek and double-time for all overtime, plus wage and fringe boosts.

Among the settlements that have been reached in other areas are these:

- Sheet metal workers in a 10-county western Pennsylvania area have signed a three-year pact giving them 57½ cents in wages and 5 cents more in fringes. The contract provides for arbitration of non-jurisdictional disputes.
- Structural ironworkers in Birmingham, Ala., have settled for 35 cents in wages over the next three years, plus two 2-cent raises in health and welfare and two 1-cent increases in apprenticeship contributions.
- Chicago lathers have won two, 22-cent wage increases in a two-year contract with no increase in fringe benefits that now total 30 cents.

NLRB Clamps Down on Boycotts

The National Labor Relations Board apparently intends to strengthen, rather than weaken, the ban against secondary boycotts.

In a case involving the picketing of a West Virginia construction project by a local of the sheet metal workers union, the board unanimously found the union guilty of an unlawful boycott on all available counts.

The most significant aspect of the decision is a ruling that construction is an "industry" and is an "industry affecting commerce." The result is that a contractor who is a secondary employer in a labor dispute automatically qualifies for the law's protection without further proof of meeting the commerce requirement.

The nub of the problem in the West Virginia dispute was the hiring of a sheet metal subcontractor whose employees were not members of the sheet metal workers union. The union picketed the job in protest. The work of three other contractors was shut down. An unfair labor practice complaint was then issued against the union.

The complaint was originally dismissed because there was no proof that the secondary employers (the three contractors whose work was halted) were engaged in "an industry affecting commerce." The quoted language was added by the Landrum-Griffin law.

"Nonsense," said the NLRB. The dictionary tells us that construction is an "industry" and it is common knowledge that the industry affects commerce, the Board explained.

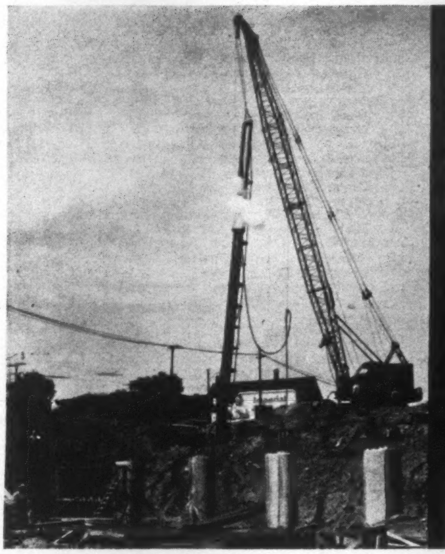
"In deciding secondary boycott cases," the Board said, "we shall hereafter construe broadly the language 'engaged in commerce or in an industry affecting commerce,' which appears in Section 8 (b) (4), in order to fulfill the manifest Congressional purpose to give the widest coverage to secondary boycott provisions."

The board called the dispute a "common situs situation." It said the union failed to identify the primary employer (the sheet metal contractor) as required by the Moore Drydock case.

“No Trouble in Driving . . . Excellent Service,”

Contractor Says of Armco Pipe Piles

New steels are
born at
Armco



Typical scene, showing a Bates & Rogers rig driving Armco Pipe Piles for one of the bridges.

These bridges, part of the Cleveland Innerbelt Project, are supported by Armco Pipe Piles driven by Bates & Rogers Construction Corporation.

“We had no trouble driving approximately 45 miles of 14-inch and 12-inch diameter pipe pile for the Cleveland Innerbelt Project. The long lengths, up to 70 feet; the wide variety of wall thicknesses available; and the excellent service were reasons we purchased Armco Pipe Piles,” said Bates & Rogers Construction Corporation, contractors of Chicago.

Steel

For strength,
economy,
durability

* * *

Armco Pipe Piles are supplied in 10- to 22-inch diameters, in a wide range of wall thicknesses, and manufactured to A.S.T.M. Specifications. They can be driven with any commonly used pile driving equipment. Write for catalog containing valuable engineering data, or ask your local Armco Sales Engineer. **Armco Drainage & Metal Products, Inc., subsidiary of Armco Steel Corporation, 7371A Curtis Street, Middletown, Ohio.**

ARMCO Drainage & Metal Products

Equal Job Rights

President's Committee issues its regulations

Reacting to complaints from the Defense Department and federal contractors, the President's Committee on Equal Employment Opportunity tightened—and partially trimmed—the scope of its anti-discrimination rules for work on government contracts.

In publishing its rules and regulations to be followed in eliminating bias against Negroes and other minority groups, the committee last week:

- Raised the size of the contract covered by the regulations from a proposed $5,000 to $10,000.
- Simplified the reporting forms to be filed by contractors and "first tier" subcontractors.
- Granted certain exemptions from the anti-discrimination rules for "standard commercial supplies and raw materials," for subcontractors below the "first tier," and for other special groups of employers.

Otherwise, the regulations stand as originally drafted. They now become the operating rules for contracting agencies, defense contractors and labor unions to follow in applying the anti-discrimination clause in contracts.

In a nutshell, the rules say:

- Government contracting agencies are responsible for policing the contract against work discrimination.
- Contractors and first-tier subcontractors must file compliance reports stating there is no discrimination in their government work.
- The same contractors and subcontractors, in bidding on a government contract, must, on request, also file reports that unions they deal with do not discriminate in their membership.

For employers complying with the regulations, the committee is authorized to issue "certificates of merit." For those who fail to comply, the committee can recommend cancellation of their government contract after formal hearings before the committee and contracting agencies.

The committee's executive director, Jerry R. Holleman, Assistant Secretary of Labor, emphasized that the committee will seek compliance through voluntary negotiations with contractors.

Though the committee will investigate complaints of discrimination, Mr. Holleman said, "We have a positive, affirmative approach." Instead of relying on complaints, the committee will ask contractors to sign an anti-discrimination "plan for progress" agreement with the government.

OFFICIAL PROPOSALS

Bids: August 8, 1961

Office of City Purchasing Agent Nashville, Tennessee

Sealed bids will be received by the Purchasing Agent of the City of Nashville, Tennessee, at the office of the Purchasing Agent, until 10:00 A.M., Central Standard Time, on August 8, 1961, for Contract No. 9.1—30" By-Pass Main, 36" and 48" Transmission Main; Contract No. 9.2—48" Transmission Main; and Contract No. 9.3—48" Transmission Main, all in accordance with plans and specifications which are on file at the office of the Director of the Nashville Waterworks Department, City Hall, Nashville, Tennessee, and also at the office of The Chester Engineers, 601 Suismon Street, Pittsburgh 12, Pennsylvania. Immediately after closing time for receipt of bids, they will be publicly opened and read aloud in the office of the Purchasing Agent, City Hall.

The successful bidder will be required to furnish satisfactory Performance and Labor and Materialmen's Bonds.

Copies of the plans and specifications may be obtained by depositing Fifty Dollars ($50.00) with the Engineers for each set of documents so obtained, the full amount of which will be refunded to each actual bidder, and Twenty-Five Dollars ($25.00) will be refunded to all others who return plans and specifications in good condition within ten (10) days after the opening of the bids.

The right is reserved by the City of Nashville, through the Mayor, to reject any and all bids, to waive any informalities in the bids received, and to accept any bid which, in its opinion, may be for the best interest of the City.

A certified check or bank draft, payable to the City of Nashville, or a satisfactory bid bond executed by the bidder and a Surety Company, in an amount equal to Five Per Cent (5%) of the bid, shall be submitted with each bid.

No bid may be withdrawn for sixty (60) days after the scheduled closing time for the receipt of bids.

CITY OF NASHVILLE, TENNESSEE
E. B. SMITH
PURCHASING AGENT

Bids: August 29, 1961

West End Relief Sewer—Section I Vernor to Dix Department of Public Works City of Detroit, Michigan

ADVERTISEMENT
CONTRACT PW-3955

Sealed proposals for construction of a relief sewer in Patton Park and Woodmere Cemetery Association property, will be received at the Office of the City Engineer, 528 City-County Building, Detroit 26, Michigan, until 2:00 P.M., Detroit time, August 29, 1961, and then at such place and time publicly opened and read aloud.

The work consists of the construction of approximately 5,115 lineal feet of 14'-6" x 14'-6" reinforced concrete box sewer, of which 235 lineal feet is on piles; 137.5 lineal feet of 12'-6" x 6'-6" reinforced concrete siphon box sewer; reinforced concrete connections of an existing 6'-3" cylinder sewer; and 215 lineal feet of 12 inch pipe sewer. All of the work is to be accomplished in tight-sheeted and braced open-cut excavations.

The Bidding Documents which must be used in submitting a proposal may be examined at the Office of the City Engineer during regular business hours and copies may be obtained upon deposit of $25.00 per set, which will be refunded upon return of the Bidding Documents in good condition, within 10 days after the opening of bids or if used in submitting a proposal.

Each proposal must be accompanied by a certified check, bank draft or a satisfactory surety bid bond in an amount not less than 5 percent of the total bid price as guarantee and security for the acceptance of the Contract.

Checks shall be made payable to the Treasurer, City of Detroit.

No proposal once submitted may be withdrawn for at least 45 days after the actual opening of the bids. The City of Detroit reserves the right to waive any irregularity in any bid, or to reject any or all bids, should it be deemed for its best interest.

CITY OF DETROIT
GLENN C. RICHARDS
Commissioner of Public Works
CLYDE L. PALMER
City Engineer

OFFICIAL PROPOSALS

Bids: August 29, 1961

Philadelphia, Penna. Procurement Department Water Department

Sealed bids will be received in Room 313, City Hall Annex, until 2.30 P.M., Daylight Saving Time, on Tuesday, August 29, 1961, and opened at that time for:

BID NUMBER 2810—WORK NUMBER S-2842-F—WAKELING STREET RELIEF SEWER in Wissinoming Park (on Line of Vankirk Street) from Charles Street to Frankford Avenue and in Right of Way in North Cedar Hill Cemetery from Frankford Avenue to Bustleton Avenue and Benner Street intersection; Benner Street from Bustleton Avenue to Oakland Street.

PRINCIPAL ITEMS OF WORK

Excavation in Tunnel	28,700 cu. yds.
Excavation for Working Shafts and Manholes on Tunnel Section	1,150 cu. yds.
Excavation in Open Cut for Rectangular Sewer and Dispersion Chamber	2,900 cu. yds.
13 Feet Diameter Concrete Sewer in Tunnel	3,380 lin. ft.
12 Feet 3 Inches Diameter Concrete Sewer in Tunnel	790 lin. ft.
Sewers in Shaft	28 lin. ft.
11' 3" x 11' 3" Rectangular R.C. Sewer	200 lin. ft.
Reinforced Concrete Junction Chamber in Tunnel, 44 Feet Long	1
Dispersion Chamber in Open Cut	1
Manholes	4
Water Main Relay	150 lin. ft.

Proposal forms, questionnaires and specifications may be obtained from the Water Department, in Room 1132, City Hall Annex, Juniper Street and Filbert Street, Philadelphia 7, Penna. Blueprints of plans may be purchased at bidder's expense, directly from the Keystone Blue Paper Company, 1230 Arch Street, Philadelphia 7, Penna.

No bids will be received unless bidder is qualified by the Procurement Commissioner. The questionnaire form with all questions fully answered must be filed with the Water Commissioner, Room 1113, City Hall Annex, at least one (1) week prior to the date of opening bids.

Each proposal must be accompanied by security in form and amount as set forth in the proposal form.

District of Columbia—Bridge Construction—Dept. of Highways & Traffic, D. C., June 23, 1961. SOUTHWEST FREEWAY AT SOUTH CAPITOL STREET, BRIDGE NO. 1104, PIERS & ABUTMENT, FEDERAL AID PROJECT NO. I-95-1(13)2— Invitation No. C-61152-H, consist. of 3,696 cu. yds. Class AA Special Pier Concrete; 3,586 cu. yds. Class BB Substructure Concrete; 3,619 cu. yds. Class BB Superstructure Concrete; and 7,670,000 lbs. Structural Steel. (Wage rates have been predetermined by Labor Dept.) Bid forms, plans and specifications are now available from Supervisor, Bid & Contract Division, Procurement Office, D. C., Room 404, 499 Penn. Ave., N.W., upon deposit of a certified check for $20.00 per set, payable to D. C. Treasurer (Phone NA 8-6000, Ext. 448). SEALED BIDS to be opened 3:00 PM, EDT, August 1, 1961, in Room 424, 499 Penn. Ave., N.W.

Sealed bids will be received in the office of the Engineering and Construction Director, Panama Canal Company, Balboa Heights, Canal Zone, under reference PC62—1, until 1:00 P. M., E.S.T., September 1, 1961, and will at that time be publicly opened, for the construction of 100—two, three, and four-bedroom duplex apartments of either precast concrete or concrete block walls. Work also includes furnishing all systems, such as sanitary sewer, water distribution, electrical distribution, telephone, storm drainage, and required grading, roads, and sidewalks. This group of houses is the first of a planned 500 unit program to be completed within 5 years. Plans and specifications will be available shortly for examination by interested parties at Panama Canal Company, Building 3, Floor 5, New Orleans Army Terminal, New Orleans, Louisiana. Complete sets of data may be obtained from this office. A $50 deposit is required for each set but will be refunded when data are returned. For further information, contact this office, or Telephone (New Orleans) 947-4595, Area Code 504.

Bids: July 27, 1961

New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.,—Pursuant to the provisions of the Highway Law, and Canal Law, Article 2, Title 9 of the Public Authorities Law, and special provisions for projects financed with Federal Aid Funds, sealed proposals will be received until ten-thirty o'clock A.M., advanced standard time which is nine-thirty o'clock A.M., eastern standard time, on the 27th day of July 1961, by Henry A. Cohen, Director, Bureau of Contracts, 12th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects:

County	Contract No.	Name	Miles	Types	Deposit	Estimated Cost of Work
DISTRICT No. 1, F. J. Fuller, District Engineer, 353 Broadway, Albany 1, New York						
Albany (Int. Trg. Rte. 787)	FIC 61-16	Interstate Rte. Conn, 540. Rte. 9W to Green Street (City of Albany) Project I-787-3(43)	....	Extension of Storm Sewer	$21,000 Plans $5	$364,000
Albany Rensselaer	TCB 61-1	Repairing the 112th St. Br. & Approaches Between the Cities of Troy and Cohoes	0.22	Asphalt Conc.=0.16 Mi.; Open Steel Floor=0.04 Mi.; Misc. Work=0.02 Mi.; Repairs to 5 Span Br: Reinf. Conc. Arch Sps. 2 @ 121.5′; 2 @ 168′ and Steel D.L. Bascule Ctr. Span @ 224′	$20,000 Plans $5	349,000
Essex (Rte. 9, 22)	D.A. 61-2	State Highways 8314, 8238, 232, 859, 8128, 1641, 1687 Proj. RAD 13(5) Cont. 1	25.0±	Tree Trimming	$800 Plans $5	15,000
Essex	D.A. 61-6	Defense Access: Bypass of D&H Railroad Overhead Crossing. Proj. RAD 13(1)	0.29	Asphalt Concrete	$1,500 Plans $5	26,000
Rensselaer (Rte. 22, 43)	FARC 61-104	Stephentown-Lebanon Springs, S.H. 8279; Stephentown Ctr.-Mass. S.H. 680; Stephentown-Center Berlin S.H. 8163. Proj. F-440(3); F-257(5)	11.76	Asphalt Conc.=11.56 Mi. Misc. Work=0.20 Mi.	$159,000 Plans $5	2,898,000
Saratoga (Rte. 32)	FARC 61-60	Stillwater-Schuylerville, Pt. 1, S.H. 5205: Stillwater-Schuylerville, Pt. 2, S.H. 5230 Proj. S-393(1)	2.60	Asphalt Concrete	$16,000 Plans $5	307,000
DISTRICT No. 2, L. Ketchum, District Engineer, 109 No. Genesee Street, Utica 1, New York						
Fulton (Rte. 10, 29)	R.C. 61-124	Schoolhouse-Lassellsville, Pt. 1, S.H. 5554; Rockwood-Fullers Cors. S.H. 8400; Caroga Creek-Canada Lake, S.H. 9039	5.78	Asphalt Concrete, Type 1A	$13,000 Plans $5	229,000
DISTRICT No. 3, E. E. Towlson, District Engineer, 333 E. Washington Street, Syracuse, New York						
Cortland (Rte. 13)	FARC 61-9	Dryden, S.H. 215; Dryden-Cortland, Pt. 2, S.H. 535 Proj. F.U.-513(6)	4.36	Asphalt Concrete, Type 1A	$50,000 Plans $5	898,000
DISTRICT No. 4, B. F. Perry, District Engineer, Barge Canal Terminal, Rochester 1, New York						
Genesee (Rte. 77)	R.C. 61-114	Indian Falls Corfu, Pt. 2, S.H. 922; Corfu-Indian Falls, Pt. 2 & Indian Falls-Alabama, S.H. 8245 & Corfu-Indian Falls, Pt. 2, S.H. 1753	7.60 (0.06 Acc.)	Asphalt Concrete	$34,000 Plans $5	603,000
Livingston (Rte. 15)	FARC 61-115	Lakeville-East Avon, S.H. 8034 Proj. F-61(4)	3.86	Asphalt Concrete=3.82 Mi. Misc. Work=0.04 Mi.	$26,000 Plans $5	479,000
Livingston (Rte. 256)	R.C. 61-113	Scottsburg-Upper Lakeville, Pt. 2, S.H. 8397	8.54	Asphalt Concrete	$25,000 Plans $5	450,000
Monroe	LOSPTL 61-3	Lake Ontario State Parkway (Dewey Ave.-Rochester, City Line)	1.66	Electrical Lighting Facilities	$9,500 Plans $5	170,000
Monroe	M 61-10	East Guard Lock Near the City of Rochester	0.20	Repairs to lock and Canal Walls	$9,000 Plans $5	160,000
DISTRICT No. 5, E. G. H. Youngmann, District Engineer, State Office Bldg., 65 Court Street, Buffalo 2, New York						
Cattaraugus (Rte. 242)	R.C. 61-118	Ellicottville-Machias, Pt. 2, S.H. 8416	9.58	Asphalt Concrete	$45,000 Plans $5	822,000
Chautauqua (Rte. 17J)	FARC 61-116	Lakewood-Chautauqua, S.H. 9028 Proj. S-557(2)	0.62	Asphalt Conc.=0.57 Mi; Misc. Work=0.05 Mi.; Prestress. Conc. Beam Bridge 72′ Sp.	$14,000 Plans $5	255,000
Chautauqua (Rte. 74)	R.C. 61-117	Cutting-Clymer, S.H. 8278 Clymer-Panama, S.H. 8208	8.86 (0.02 Acc.)	Asphalt Conc.=8.81 Mi. Misc. Work=0.07 Mi.	$54,000 Plans $5	985,000
Erie & Niagara	TAN 61-9	New York State Thruway: Niagara Section, Subdivisions N-8-S and N-8-N	....	Rehabilitation of Electrical Facilities on Grand Island Bridges and Approaches	$13,000 Plans $10	242,000
Niagara (Rte. 93)	FARC 61-84	Lockport-Tonawanda Creek, S.H. 749 Project S-685(4)	9.61	Asphalt Concrete	$39,000 Plans $5	717,000
DISTRICT No. 6, Wm. J. Dennis, District Engineer, State Office Bldg., 30 West Main Street, Hornell, New York						
Steuben (Rte. 70)	FARC 61-106 RC 61-107	Big Creek, Pts. 1 & 2, S.H. 906 Big Creek, Pts. 1 & 2, S.H. 906 Proj. F-867(6)	2.09	Asphalt Concrete	$7,000 Plans $5	115,000
DISTRICT No. 7, R. W. Sweet, District Engineer, 444 Van Duzee Street, Watertown, New York						
Clinton & Franklin	D.A. 61-5	Various State, County & Town Highways in District 7 (Cont. #2). Proj. RAD-13(5)	165.0±	Tree Trimming	$1,800 Plans $5	32,000
Franklin (Rte. 11)	R.C. 61-127	Malone-Chateaugay, S.H. 5613	4.58	Asphalt Concrete Ty. 1A	$13,000 Plans $5	233,000
Jefferson (Rte. 11)	FARC 61-122	Adams-Watertown, Pt. 3, S.H. 5119 Adams-Watertown, Pt. 4, S.H. 5426 Proj. F-327(12)	2.09	Asphalt Conc., Type 1A	$12,000 Plans $5	224,000
Jefferson (Rte. 178)	FARC 61-95	Adams Vill: So. Main St. & Pierrepont Manor Hamlet: Ellisburg St., S.H. 1166, State Road, Pt. 2, S.H. 426 Proj. S-586(1)	0.80	Asphalt Conc. Type 1A=0.70 Mi.; Misc. Work=0.10 Mi.; Comp. I-Beam Br. 3 Sps. @ 229.9′ Tot.	$15,000 Plans $5	280,000
Jefferson	MA 61-2	Maintenance Area for Interstate Rte. 505 (at Intersection with N. Y. State Rte. 12)	....	Foundation Crse. and Chain Link Fencing	$3,500 Plans $5	63,000
St. Lawrence (Rte. 37)	FARC 61-105	Vill. of Messena Ctr. St.-Parker St., FASSH 57-5: Massena So. Side Rte. Pt. 2, FASH 55-7; Massena-Helena, Pt. 1, S.H. 1261 Proj. US-467(4),; U-580(17)	5.13	Alum. Chain Link Fenc.: 6′ High, Row Fencing; 4′ High, Resetting; Chain Link Fenc, 6′ high	$2,500 Plans $5	45,000
DISTRICT No. 8, M. N. Sinacori, District Engineer, Pleasant Valley Rd., Poughkeepise, New York						
Columbia	FASS 61-4	Canaan Ctr.-Austerlitz Town Line, C.R. 79 Proj. S-7(2)	2.36	Calcium Chloride Treat. Gravel	$18,000 Plans $5	322,000
Columbia	FASS 61-3	Manorton-Blue Stores, CR 44 Proj. S-234(4)	1.38	Stabilized Gravel Surf. Crse. Calc. Chloride Treatment	$11,000 Plans $5	194,000
Dutchess	FASS 61-2	Stanfordville-Bullshead-Wurtemburg Rd. C.R. 19 Proj. S-342(2)	4.87	Asphalt Concrete Reinf. Conc. Open Box Br. 23.00′ Sp. Rein. Conc. Closed Box Br. 33′ Sp.	$45,000 Plans $5	823,000
Rockland	FASS 61-5	New City-Congers Rd. County Road (Main Street to Brewery Rd.) Proj. S-311(3)	0.72	Asphalt Concrete	$19,000 Plans $5	332,000
Ulster (Rte. 55)	FARC 61-126	Napanoch-Montela, S.H. 603 Proj. F-487(3)	5.19	Asphalt Concrete	$13,000 Plans $5	235,000
DISTRICT No. 9, J. C. Federick, District Engineer, 71 Frederick Street, Binghamton, New York						
Delaware (Rte. 28)	R.C. 61-109	Delhi-Andes, S.H. 982	6.88	Asphalt Concrete	$24,000 Plans $5	437,000
Otsego (Rte. 80)	R.C. 61-119	New Berlin-Edmeston, S.H. 8143	4.60	Asphalt Concrete	$14,000 Plans $5	249,000
Schoharie (Rte. 10)	R.C. 61-110	Cobleskill-Sharon Springs, Pt. 3, S.H. 1911	6.25	Asphalt Concrete	$17,000 Plans $5	310,000
Sullivan (Rte. 42)	R.C. 61-111	Forestburg-Orange Co. Line, S.H. 1478	4.01	Asphalt Conc.	$10,000 Plans $5	183,000
Sullivan (Rte. 17)	R.C. 61-112	Bloomingburg-Monticell, Pt. 2, S.H. 5457; Bloomingburg-Monticello, Pt. 1, S.H. 5510	6.75	Asphalt Conc, Type 1AC	$8,000 Plans $5	153,000
DISTRICT No. 10, A. M. Sarr, District Engineer, 325 W. Main Street, Babylon, L. I., New York						
Nassau, Suffolk (Rtes. 106, & 25)	FARC 61-125	Newbridge Road, S.H. 546; Jericho Turnpike, Pt. 2, S.H. 5111; Mattituck-Greenport, Pts. 1 & 3, S.H. 8229; Smithtown Branch-Coram, S.H. 8268 Proj. S-505(1), F-1000(9), and F-434(4)	1.55	Miscellaneous Drainage	$31,000 Plans $5	565,000
New York	FAHRD 61-1	Harlem River Drive (East 132nd St. to West 143rd St.) Contract 132B Proj. U-1133(8)	0.65 (0.93 Acc.)	9″ Cem. Conc. Pavt. with Carbon Black=0.65 Mi.; Asph. Conc. Pavt.=0.93 Mi.; Comp. Struct. 5 Spans (Var.) 310′ Tot.; Comp. Struct. 10 Sps. (Var.) 553′ Tot.;	$150,000 Plans $5	2,803,000

(Continued on following page)

(Continued from preceding page)

Suffolk	FALIE 61-3	Long Island Expressway, Contract No. 12 (Commack Road to Islip Avenue) Proj. U-862(32)	3.80 (8.62 Acc.)	Ped. Overpass—Steel and Conc. Struct. 7 Sps. (Var.) 580′ Tot. 9″ Cem. Conc. Pavt. with Carb. Black, 2@ 24′ Var.= 3.45 Mi.; Misc. Work=0.35 Mi.; Access=3.34 Mi. Cem. Conc. Pavt. and 5.28 Mi. Asph. Conc., 8 H.G.S. Comp. I-Beam, 1 Sp. 83.6′; 1 Sp. 84.2′; 4 Sps. 286.4′ Tot.; 4 Sps. 279.1′ Tot; 4 Sps. 286.7′ Tot.; 1 Sp. 72.1′; 1 Sp. 72.1′; 4 Sps. 231.5′ Tot.	$375,000 Plans $10	6,811,000

Any projects in this letting that are on the Federal Aid highway systems are subject to the provisions of the "Federal Aid Highway Act of 1956", being Public Law 627, 84th Congress, approved June 29, 1956, and are also subject to the applicable New York State statutes.

In compliance with the provisions of Section 115 (Prevailing Rate of Wage), Public Law 627, the minimum wages to be paid laborers and mechanics are included in wage schedules that are set out in the bid proposal.

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

If the deposit is $10.00 or more, full refund for one copy of the plans and specifications will be made to a bidder for the particular project, if such plans and specifications are returned in good condition within 30 days after the award of the contract or after the rejection of the proposal. The successful bidder is not required to return the copy of the plans and specifications in order to be entitled to such refund. If the deposit is $10.00 or more, partial refund will be made for the return of all other copies of plans and specifications in good condition within 30 days after the award of the contract or the rejection of the proposal.

Special attention of bidders is called to "Information for Bidders" in the Public Works Specifications, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to priorities and allocations under the Defense Production Act of 1950, as Amended, and all regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Department of Public Works" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bid deposit, the execution of the contract and bond shall conform to the provisions of the Highway Law, as set forth in the "Information for Bidders".

The right is reserved to reject any or all bids.

J. BURCH McMORRAN
SUPT. OF PUBLIC WORKS

Bids: July 27, 1961

New York State Road Work Orange & Dutchess Counties

NOTICE TO CONTRACTORS: THE NEW YORK STATE BRIDGE AUTHORITY, BRIDGE PLAZA, POUGHKEEPSIE, N. Y. Pursuant to the provisions of the Highway Law, and Article 3, Title 2 of the Public Authorities Law, sealed proposals will be received until ten-thirty o'clock A.M., advanced standard time, which is nine-thirty o'clock A.M., eastern standard time, on the 27th day of July 1961, by Henry A. Cohen, Director, Bureau of Contracts, 12th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., on behalf of said Authority, for the following project:

ORANGE & DUTCHESS COUNTIES
KURT G. RAUER, DISTRICT ENGINEER, PLEASANT VALLEY ROAD, POUGHKEEPSIE, NEW YORK

NAME OF PROJECT & MILES—Newburgh-Beacon Bridge over the Hudson River (Cont. 3) Superstructure 14 SPS. 6870′ Total. 1.30 Miles.

DEPOSIT FOR PLANS—$5.00.
BID DEPOSIT—$600,000.
ENGINEER'S EST.—$10,725,000.

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts, Albany, New York, and at the office of the District Engineer, noted above, and at the office of the State Department of Public Works, 270 Broadway, New York City, and may also be seen at the New York State Bridge Authority Office at Mid Hudson Bridge Plaza, Poughkeepsie, N. Y.

If the deposit is $10.00 or more, full refund for one copy of the plans and specifications will be made to a bidder for the particular project, if such plans and specifications are returned to the Bureau of Contracts in good condition within 30 days after the award of the contract or after the rejection of the proposal. The successful bidder is not required to return the copy of the plans and specifications in order to be entitled to such refund. If the deposit is $10.00 or more, partial refund will be made for the return of all other copies of plans and specifications in good condition within 30 days after the award of the contract or the rejection of the proposal.

Special attention of bidders is called to "Information for Bidders" in the Public Works Specifications.

Proposal must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the NEW YORK STATE BRIDGE AUTHORITY for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bond shall conform to the provisions of the Highway Laws, and Public Authorities Law, as set forth in "Information for Bidders".

The right is reserved to reject any or all bids.

J. BURCH McMORRAN
SUPT. OF PUBLIC WORKS
FOR
NEW YORK STATE BRIDGE AUTHORITY
DR. JOHN L. EDWARDS
CHAIRMAN

Bids: August 30, 1961

Virginia State Ports Authority

NOTICE TO CONTRACTORS

The Virginia State Ports Authority will receive sealed bids at its office on the 16th Floor, Maritime Tower, Norfolk, Va., until 2 P.M. (Eastern Standard Time) August 30, 1961, at which time and place they will be publicly opened and read, for the construction of certain general cargo terminal facilities and for the improvement of certain existing facilities at Lamberts Point and Sewells Point in the City of Norfolk, Va. Major components of the work consist of a 5-berth finger pier with reinforced concrete deck on open concrete pile foundation, transit shed superstructure covering 320,000 sq. ft. of usable storage space, 2 gantry cranes, dike and bulkhead, 2 back-up warehouses (each 120′ x 750′ approximate dimension), a refrigerator warehouse having usable capacity of 100,000 cu. ft., a service building and gear house, railroad trackage, road net, electrical and water supply and distribution systems and other supporting facilities.

The Drawings, Specifications, Instructions to Bidders, and other Contract Documents are on file and available for inspection at the offices of the Virginia State Ports Authority in Norfolk, Va., New York, N. Y., and Chicago, Ill.; at the offices of Lockwood Greene Engineers, in Spartanburg, S. C. and New York, N. Y.; at the office of Blackburn and Blauvelt Engineers, in Richmond, Va.; at the office of the Chief Engineer, Norfolk and Western Railway Company, Roanoke, Va.; at the offices of the Associated General Contractors of America in Raleigh, N. C., and Atlanta, Ga.; at the offices of F. W. Dodge Corporation in Norfolk, Va., Richmond, Va., and Baltimore, Md.; and at the office of the Builders & Contractors Exchange, Inc., in Norfolk, Va., and Richmond, Va. Drawings, Specifications, Instructions to Bidders, and other Contract Documents may be obtained by application, accompanied by check or money order for $200.00 per set, to: Lockwood Greene Engineers, 1020 Montgomery Building, Spartanburg, South Carolina. Bona fide General Contractors, who submit a bid, may obtain a refund by returning the Drawings and Specifications in good condition.

The work is divided into two parts, one of which is referred to as Division I and consists of all the work to be performed at Lamberts Point, and the other of which is referred to as Division II and consists of all the work to be performed at Sewells Point. Any bidder may submit a bid on the work in either or both of such Divisions. A separate contract covering the work in each Division, or one contract covering the work in both Divisions—dependent upon which involves the lowest cost for the entire work—will be awarded to the lowest responsible bidder(s). The Virginia State Ports Authority reserves the right to reject any or all bids.

No bids may be withdrawn during the period of 120 days from the date of opening of bids.

In accordance with Title 54, Chapter 7 of the Code of Virginia of 1950, as amended, it will be necessary for a bidder, whether a resident or non-resident of Virginia, to show evidence that he holds a certificate of registration issued by the Virginia State Registration Board for Contractors, before his bid is considered.

Bids: August 11, 1961

Project No. St-80
Bulkhead

Crown Bay, Charlotte Amalie St. Thomas, U. S. Virgin Islands

Sealed bids will be received until 11:00 A.M. on Friday, August 11, 1961 and then publicly opened by the Contracting Officer, Department of Property and Procurement, Division of Procurement, Charlotte, Amalie, St. Thomas, U. S. Virgin Islands, for the construction of a bulkhead in the vicinity of Charlotte Amalie, St. Thomas, U. S. Virgin Islands.

Information regarding bidding material, bid guarantee, and bonds, drawings and specifications and other contract documents are open for public inspection at the following locations:

1. Office of the Division of Procurement, Charlotte Amalie, St. Thomas, U. S. Virgin Islands.

2. Office of the Commissioner, Department of Public Works, Charlotte Amalie, St. Thomas, U. S. Virgin Islands.

3. Office of the Public Works Advisor, Office of Territories, Room 6543, Interior Building, Washington, D. C.

4. Praeger-Kavanagh, 126 East 38th Street, New York 16, New York.

Plans and specifications may be procured from the Office of the Contracting Officer, Division of Procurement, Charlotte Amalie, or from the Office of Praeger-Kavanagh, New York, upon the deposit of $20.00. Deposit shall be only by certified check payable to the Government of the Virgin Islands, and deposits will not be refunded.

Each bid must be accompanied by a satisfactory bid guarantee in the amount of 5 percent of the total bid.

The successful bidder will be required to furnish performance and payment bonds, each in the amount of 100 percent of the contract price. Sureties must hold certificates of authority from the Secretary of the Treasury for bonding in the U. S. Virgin Islands. No bid may be withdrawn until 45 calendar days after the scheduled closing time to receive bids.

The Government of the Virgin Islands reserves the right to select the successful contractor or to refuse all bids or to pursue any other course which may be in the best interest of the Government of the Virgin Islands.

U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Invitation No. DS-5632) SET ASIDE FOR SMALL BUSINESS, will be received at Denver, Colorado, until 2 p.m. MST, August 15, 1961, for furnishing two (2) 16.75-foot by 34-foot fixed-wheel gates for Flaming Gorge Dam, Colorado River Storage Project, Utah-Wyoming. Delivery is desired within 360 days. For particulars, address Bureau of Reclamation, Building 53, Denver Federal Center, Denver 25, Colorado. Floyd E. Dominy, Commissioner.

Bids: August 10, 1961

New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.,—Pursuant to the provisions of the Highway Law, and CANAL LAW, and special provisions for projects financed with Federal Aid Funds, sealed proposals will be received until ten-thirty o'clock A.M., advanced standard time, which is nine-thirty o'clock A.M., eastern standard time, on the 10th day of AUGUST, 1961, by Henry A. Cohen, Director, Bureau of Contracts, 12th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects:

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
DISTRICT No. 1, F. J. Fuller, District Engineer, 353 Broadway, Albany 1, New York						
Essex	FASS 61-6	Tahawus-Schroon River, Part 4, County Road 2B Proj. S-1047(4)	3.63	Top course Broken Stone, Bit. Double Surf. Treat. Twin Box Conc. Culvert, 1 Span 27.4′	$35,000 Plans $5	$627,000
Saratoga Warren (Rte. 9)	R.C. 61-82 C. 61-3	South Glens Falls Village: Saratoga Avenue and Main Street, S.H. 5598 City of Glens Falls: Glen Street Arterial Highway (Hudson River to Oakland Street)	0.28	Asphalt Concrete Reconstruction and Widening of Bridge Deck 736′ Long, Prestressed Concrete Beam Bridge, 64.6′ Span	$32,000 Plans $5	587,000
Saratoga (Int. Trg. Rte. 87)	FIM 61-2	Interstate Route 502 (Clifton Park to Malta) Proj. I-87-3(44)167	7.47	Plastic Pavement Markings	$4,500 Plans $5	80,000
DISTRICT No. 2, L. Ketchum, District Engineer, 109 No. Genesee Street, Utica 1, New York						
Oneida	M 61-9	Nine Mile Spillway on the Erie Canal	....	Rehabilitation of Spillway and Misc. Gate and Channel Work	$9,000 Plans $5	175,000
Oneida	M 61-11	Schuyler Street Bridge Over Erie Canal (E-45) (Town of Marcy)	....	Removal of Structure and Misc. Work	$1,200 Plans $5	21,600
DISTRICT No. 3, E. E. Towlson, District Engineer, 333 E. Washington Street, Syracuse, N. Y.						
Cortland (Rte. 13)	FARC 61-9	Dryden, S.H. 215; Dryden-Cortland, Pt. 2, S.H. 535 Proj. F.U.-513(6)	4.36	Asphalt Concrete, Type 1A	$50,000 Plans $5	952,000
Onondaga (Int. Trg. Rte. 81)	FIRC 61-128	Interstate Route 505 (Syracuse-Mattydale, S.H. 54-3 Includ. Interchange with New York State Thruway and 7th North Street, C.R. 221) Proj. I-81-2(61)	2.40 (4.10 Acc.)	Asphalt Conc.=0.63 Mi.; Cem. Conc. Pvt.=2.69 Mi.; Misc. Work=3.18 Mi.; Toll Utility Bldg., Plaza Canopy, Plaza Islands and Associated Work: 2 H.G.S. Comp. Beam, 4 Sps. 179.5′ Tot., 4 Sps. 179.25′ Tot.	$127,000 Plans $5	2,306,000
DISTRICT No. 4, B. F. Perry, District Engineer, Barge Canal Terminal, Rochester 1, N. Y.						
Monroe (Int. Trg. Rte. 490)	FIC 61-15	Interstate Route Connection 580 (Rochester City: Eastern Expressway, Parts 2 & 3, S.H. No. FIC 58-2) Proj. I-490-2(25)	2.50	Roadside Development	$6,000 Plans $5	105,000
Monroe (Int. Trg. Rte. 490)	FIM 61-3	Interstate Route Connection 580 (Culver Road to Winton Road) Rochester Outer Loop, Part 2, FAC 59-8 & FASH 59-14 (Blossom Road to Winton Road) Proj. I-490-2(28), U-1097(8)	3.04	Plastic Pavement Markings	$1,500 Plans $5	28,500
Wyoming (Rtes. 39,19A)	FARC 61-130	Pike-Castile, Part 2, S.H. 8299; Castile-Portageville, S.H. 8164. Proj. F-453(5), F-380(9)	3.46	Asphalt Conc.=3.39 Mi. Misc. Work=0.07 Mi.	$24,000 Plans $5	421,000
DISTRICT No. 7, R. W. Sweet, District Engineer, 444 Van Duzee Street, Watertown, N. Y.						
Jefferson (Int. Trg. Rte. 81)	FIM 61-4	Interstate Route 505 (Section 7AB-1) Jefferson County Line to State Highway 184 Proj. I-81-3(23)	4.60	Plastic Pavement Markings	$2,600 Plans $5	48,500
DISTRICT No. 10, A. M. Sarr, District Engineer, 325 W. Main Street, Babylon, L. I., N. Y.						
Kings (Int. Trg. Rte. 278)	FIGE 61-2	Interstate Route Connection 512, Gowanus Expressway —Contract 6 (3rd Avenue at 53rd Street to 4th Avenue at 65th Street) Proj. EI-U-278-1(63)	0.80 (1.33 Acc.)	7½″ Reinf. Conc. Slab Roadway=0.66 Mi.; Misc. Work=0.14 Mi.; Reinf. Conc. Ramps=0.53 Mi.; Sheet Asph. Pavt.=0.67 Mi.; Misc Work=0.13 Mi.; Elevated Structure Steel Girder with Conc. Slab=3,474′; Ramps and Parkway Conn. 2,790′	$850,000 Plans $10	15,369,000
Nassau	FANE 61-1	Nassau Expressway, Contract 2 (Burnside Avenue to Lakeside Drive). Proj. U-1098(6)	1.20	Demolition of Buildings	$2,700 Plans $5	49,000
Queens	FAWB 1-1	Woodhaven Boulevard (Bridge Over Long Island Railroad). Proj. UG-1148(1)	0.34	Asphalt Concrete=0.34 Mi.; Rehabilitation of R.R.G.S. Over L.I.R.R., I-Beam, 7 Sps., 280.5′ Tot.	$121,000 Plans $5	2,209,000
Queens	FINB 61-1 FAVWE 61-2 FAGCP 61-2	Interstate Route Conn. 515, Northern Boulevard, Cont. 1 (Grand Central Parkway to Flushing River), Van Wyck Expressway Extension (at the Flushing River Interchange) Grand Central Parkway Proj. EACI 678-1(58), U-1085(20), U-899(3)	2.02 (7.00 Acc.)	8″-10″ Cem. Conc. Pvt. 2 @ 36′ Var.=1.12 Mi.; Cem. Conc. Pvt. with Carb. Black=0.74 Mi.; Asph Conc.=0.16 Mi.; Access=4.16 Mi.; Cem. Conc. Pavt. & 2.84 Mi. Asph. Conc.; 3 Hgs Comp. I-Beam, 10 Sps. 296.4′ Tot., 3 Sps. 169.7′ Tot., 8 Sps. 480′ Tot.; 3 Viaducts (Hgs) Comp. I-Beam, 10 Sps. 726.5′ Tot., 17 Sps. 814.5′ Tot., 15 Sps. 626.4′ Tot.; Hgs. Comp. Pl. Gr., 3 Sps. 147.0′ Tot.; 4 Viaducts (Hgs) Comp. I-Beam & Pl. Girder 16 Sps., 1,277.5′ Tot., 101 Sps. 3,160.2′ Tot., 10 Sps., 529.1′ Tot., 30 Sps. 892.9′ Tot.; Rehabilitation of Portion of Girder Bridge, 4 Sps. 150′ and of 2 Rigid Frame H.G. Seps. 1 Sp., 41′, 2 Sps. 133′	$1,300,000 Plans $10	24,070,000

Any projects in this letting that are on the Federal Aid highway systems are subject to the provisions of the "Federal Aid Highway Act of 1956", being Public Law 627, 84th Congress, approved June 29, 1956, and are also subject to the applicable New York State statutes.

In compliance with the provisions of Section 115 (Prevailing Rate of Wage), Public Law 627, the minimum wages to be paid laborers and mechanics are included in wage schedules that are set out in the bid proposal.

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

If the deposit is $10.00 or more, full refund for one copy of the plans and specifications will be made to a bidder for the particular project, if such plans and specifications are returned in good condition within 30 days after the award of the contract or after the rejection of the proposal. The successful bidder is not required to return the copy of the plans and specifications in order to be entitled to such refund. If the deposit is $10.00 or more, partial refund will be made for the return of all other copies of plans and specifications in good condition within 30 days after the award of the contract or the rejection of the proposal.

Special attention of bidders is called to "Information for Bidders" in the Public Works Specifications, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to priorities and allocations under the Defense Production Act of 1950, as Amended, and all regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Department of Public Works" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bid deposit, the execution of the contract and bond shall conform to the provisions of the Highway Law, as set forth in the "Information for Bidders".

The right is reserved to reject any or all bids.

J. BURCH McMORRAN
SUPT. OF PUBLIC WORKS

OFFICIAL PROPOSALS

Bids: July 27, 1961

New York State Road Work
Oneida & St. Lawrence Counties

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of the Highway Law, and special provisions for projects financed with Federal Aid Funds, sealed proposals will be received until ten-thirty o'clock A.M., advanced standard time, which is nine-thirty o'clock A.M., eastern standard time, on the 27th day of July 1961, by Henry A. Cohen, Director, Bureau of Contracts, 12th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects:

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
DISTRICT No. 2, L. KETCHUM, District Engineer, 109 No. Genesee St., Utica 1, New York						
Oneida	D.A. 61-3	City of Rome: Griffiss Air Force Base Access Road Proj. RAD 12(1)	0.56	9" Cement Concrete Pavt.= 0.55 Mi.; Misc. Work=0.01 Mi.; Comp. I-Beam Bridge, 3 Spans, 206.70' Tot.	$19,000 Plans 5	$338,000
DISTRICT No. 7, R. W. SWEET, District Engineer, 444 Van Duzee Street, Watertown, New York						
St. Lawrence	R.C. 61-131	Potsdam Village, S.H. 5308	0.20	Bridge Repairs	$8,000 Plans 5	$150,000

Any projects in this letting that are on the Federal Aid highway systems are subject to the provisions of the "Federal Aid Highway Act. of 1956", being Public Law 627, 84th Congress, approved June 29, 1956, and are also subject to the applicable New York State statutes.

In compliance with the provisions of Section 115 (Prevailing Rate of Wage), Public Law 627, the minimum wages to be paid laborers and mechanics are included in wage schedules that are set out in the bid proposal.

Maps. plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

If the deposit is $10.00 or more, full refund for one copy of the plans and specifications will be made to a bidder for the particular project, if such plans and specifications are returned in good condition within 30 days after the award of the contract or after the rejection of the proposal. The successful bidder is not required to return the copy of the plans and specifications in order to be entitled to such refund. If the deposit is $10.00 or more, partial refund will be made for the return of all other copies of plans and specifications in good condition within 30 days after the award of the contract or the rejection of the proposal.

Special attention of bidders is called to "Information for Bidders" in the Public Works Specifications, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to priorities and allocations under the Defense Production Act of 1950, as Amended, and all regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Department of Public Works" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bid deposit, the execution of the contract and bond shall conform to the provisions of the Highway Law, as set forth in the "Information for Bidders".

The right is reserved to reject any or all bids.

J. BURCH McMORRAN
SUPT. OF PUBLIC WORKS

Manapouri Hydroelectric Scheme New Zealand

ANNOUNCEMENT OF HEAVY CONSTRUCTION WORK

For

Comalco Power Limited

CONSTRUCTION OF TAILRACE TUNNEL

Interested contractors are invited to submit their qualifications for performing the above work.

The tunnel is part of a hydroelectric development in southern New Zealand for Comalco Power Limited to provide power for the production of aluminum.

The work under this contract comprises driving and concrete lining of approximately 5½ miles of tunnel, of horseshoe section, thirty feet in diameter.

Contractors to receive invitations to bid will be selected, based on qualifications. Invitations will be issued in September and a contract awarded by the end of 1961. Invitations for construction of the underground power station will be issued at a later date.

Qualifications should include a comprehensive statement of the contractor's experience in performing similar or comparable work. The statement should include the contractor's business and technical organization and financial and other resources relevant to the execution of work of this nature and magnitude. Where a contractor intends to enter into a joint venture for the work with others, details of the proposed joint venture should be supplied together with qualifications of each of the associated contractors.

Qualifications should be forwarded in triplicate and should be mailed to reach the following address not later than August 1, 1961.

A brochure describing the work is obtainable from the address below:

Bechtel Corporation
International Division, 3770-PC
220 Bush Street
San Francisco 4, California
United States of America

Bids: See Advertisement

The Port of New York Authority

Sealed proposals for the following work will be received at the Office of the Chief Engineer, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. on date indicated, at which time said proposals will be opened and read in Room 1108.

Contract NYA-490.005—New York International Airport—Runway 4L—22R—Additions to Taxiways and Holding Pad—Deposit $30.00 per set of documents—Bids will be received until 2:30 P.M. on Thursday, August 17, 1961.

Contract EP-507.225—Elizabeth-Port Authority Piers—Additional Borings—Deposit $30.00 per set of documents—Bids will be received until 2:30 P.M. on Thursday, August 3, 1961.

Contract BP-507.315—Brooklyn-Port Authority Piers—Test Pits—No deposit required—Bids will be received until 2:30 P.M. on Thursday, August 3, 1961.

Contract documents may be seen at the Office of the Assistant Chief Engineer for Design, Room 1115, 111 Eighth Avenue, New York 11, N. Y. Documents will be furnished upon receipt of the above deposit (each set including one copy of the Contract Drawings) for not more than three sets to any one company. Additional sets will be furnished upon payment of an amount for each set equal to the deposit indicated above, which payment is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt will be issued. The receipt shall be delivered to Room 1115, where the documents will be furnished.

Those who have submitted a bid on the contract directly to the Authority will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one-half of the deposit for each set of documents, not exceeding three returned within forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
S. Sloan Colt, Chairman
New York, July 20, 1961

OFFICIAL PROPOSALS

Bids: August 15, 1961

Construction of 16 Inch and 20-Inch Diameter Water Supply Mains
Arlington County, Virginia

ADVERTISEMENT FOR BIDS

Sealed proposals for furnishing all materials and equipment and doing all work required for the construction of 16 and 20-inch diameter water supply mains, as described below, will be received by the Purchasing Agent in Room 213, in the Court House Building at Arlington County, Virginia, until 2:00 p.m. D.S. time on Aug. 15, 1961 and there publicly opened and read immediately thereafter:

STAGE III CONTRACT 2
CONSTRUCTION OF 16 AND 20-INCH DIAMETER WATER SUPPLY MAINS AND APPURTENANCES

1. Location: The work is located in Arlington County, Virginia, on public streets in Key Boulevard from N. Johnson Street to Fort Meyer Drive.

2. Type of Work: The principal items of work include the following:—Approximately 4,100 linear feet of 20-inch cast iron or prestressed concrete water pipe, 4,700 linear feet of 16-inch cast iron or prestressed concrete pipe, together with manholes, 12-inch pressure regulating valves, butterfly valves, miscellaneous gate valves, blow-off, air release or inlet valves, and connections to existing water mains, etc.

3. Copies of Plans and Specifications, Information for Bidders, Bid forms and other bidding and contract documents may be examined at the office of the Chief Engineer of the Water Division, County Court House, Arlington, Va.; at Dodge Reports, 900 F. Street N.W., Washington, D. C. and at the office of ALEXANDER POTTER ASSOCIATES, CONSULTING ENGINEERS, 50 CHURCH STREET, NEW YORK 7, N. Y.

4. Copies of Plans, Specifications and Bidding Documents may be obtained from the Purchasing Agent in Room 213, Court House Building at Arlington, Virginia upon deposit of THIRTY ($30.00) DOLLARS PER SET.

Full refund will be made to actual bidders for return of One (1) Set, in good condition, within two weeks after closing date for receipt of bids; refund for return of all other sets. in good condition, WITHIN THE SAME PERIOD, will be Fifty (50%) percent of the deposit. No refund will be made for return of documents in poor condition or later than the two week period stipulated.

All bids must be on the form contained in the Contract and Specifications.

Contractors, whether resident or nonresident in Virginia will be required to show evidence of a certificate of registration as required by Chapter 7 of Title 54 of the Code of Virginia before their bids will be considered, if the bid is $20,000 or more.

All bids must be accompanied by a certified check or acceptable bidder's bond in an amount of not less than Five Per Cent (5%) of the amount of the bid, made payable to the Treasurer of Arlington County, as bid security.

The successful bidder will be required to furnish a Performance Bond conditioned upon the faithful performance of the Contract and upon payment of all persons supplying labor and furnishing materials on the construction of the work.

No bidder may withdraw his bid within Thirty (30) days after actual date of opening thereof.

The County Board of Arlington County, Virginia, reserves the right to reject any or all bids and to waive any informality in the bids.

ARLINGTON COUNTY, VIRGINIA
By: H. G. Bonney
Purchasing Agent

TENDERS

Tenders are invited for the supply of:—

METERING EQUIPMENT

Specifications may be obtained on writing to the Purchasing Officer, Trinidad and Tobago Electricity Commission, P. O. Box 121, Port-of-Spain, T'dad, W.I.

Closing date for Tenders 12th September, 1961.

• POSITIONS VACANT

Sewage Treatment Plant Engineers (Civil Service Positions) The City of Nashville, Tennessee is accepting applications for the following positions: Sewage Disposal and Treatment Engineer-Graduate Sanitary Engineer or Civil or Chemical Engineer with six years experience in sewage treatment plant; age 28 to 45 years old; salary $7500 to $8200 year. Assistant Sewage Disposal and Treatment Engineer—same qualifications as above only with four years experience and age 26 to 45 years; salary $6000 to $6600 year. Chief Sewage Chemist-Graduate Chemist with 5 years full time experience in analytical work in sewage treatment; age 26 to 45 years; salary $5100 to $6000 year. All of the above under Civil Service with liberal pension, vacation and sick leave benefits. If called for interview City will pay travel and reasonable incidental expenses. Write giving education, experience, references and personal data to: Director of Waterworks, Room 201 City Hall, Nashville 3, Tennessee.

Sanitary Engineer to handle technical liaison and correspondence, and to prepare bids and proposals for the sale of waste treatment equipment and related items. Prefer MS degree or equivalent experience. Send complete details. Yeomans Brothers Company, 1999 N. Ruby St., Melrose Park, Ill.

Jr. Civil Engineer for small city. California exper. desirable. Start $515. Contact Public Works Director, City Hall, Saratoga, Calif.

Construction Executive; publicly owned company engaged in extensive home building and contract housing seeks young, well-educated construction executive to fully administer company's contracting activities. Estimating, purchasing and administrative experience desirable. Excellent compensation and future. Send complete resume to P-7063, Engineering News-Record.

Engineer Designer—Permanent career opportunity for qualified engineer experienced in design and operation of aggregate plants, central mix concrete plants, and related materials facilities. East coast location with multiplant operator. P-7090, Engineering News-Record.

• POSITIONS WANTED

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BSCE, Age 36, Plant Engineer, Industrial building construction, structural design, specifications, and architect-engineer liaison. Reg. N.Y.P.E. Seeks promising position in Northeast. PW-6933, Engineering News-Record.

Chief Estimator—Project Manager. C.E.— age 33 Commercial, industrial and heavy construction. Projects from estimate to completion including takeoff pricing, subcontract negotiations, buying and job co-ordinating. Presently employed but willing to relocate. PW-6968, Engineering News-Record.

Chief Estimator—25 yrs. experience Bldg. Const. — best references — desires position with General Contractor in South. Fully qualified for complete charge projects bidding stage to completion. Minimum salary $12,000. Will relocate to suit. PW-7018, Engineering News-Record.

A qualified Chief Estimator and Production Executive desires connection with General Contractor who wants a Florida outlet. Will furnish office, office machinery, take-off, and pricing on an exclusive basis for a reasonable weekly retainage fee. It will pay to investigate this proposition. W. C. Dick, 3507 Cardinal Boulevard, Daytona Beach, Florida. Telephone Clinton 5-1218.

Hydraulic Dredge Executive Civil Engineer available. Over 20 years experience in field investigation, cost estimates, management, consultation. Full time or project basis. PW-7022, Engineering News-Record.

Construction Manager: Extensive background all phases building construction including estimating, purchasing, contract negotiation, field staffing and supervision. Seeking permanent connection with reputable, aggressive organization. Resume available. Age 45. References. PW-7036, Engineering News-Record.

Foundations & Materials Engineer, reg'd PE. MS Soil Mechs & Found Eng'g. MS Hwy Eng'g. About nine years experience in all phases of soils, foundations & materials including field & lab work. Diversified background of design & construction of hwys, bldgs, dams, etc. Specifications & reports. Desires responsible position preferably with consulting engrs, domestic or foreign. PW-7052, Engineering News-Record.

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City Engineer—in a midwest county seat city of 5,000. Take charge of street and sewer program. Work closely with water department. Must be civil engineer registered in Iowa. Salary open. This is a new position—service has been on consulting basis. Send resume to City Clerk, Charlton, Iowa.

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Electrical Engineer—Estimator—man with experience in electrical estimating particularly in industrial, pole line, and power plant work. Reply to "Estimator" Box 1078, Columbus, Ga.

Mid-west city of 35,000 desires combination Director of Public Utilities and Water Utilities Superintendent. P.E. desirable but not essential. Also requires Electric Utilities Superintendent with line experience. Send complete resume. P-6966, Engineering News-Record.

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Construction Engineer—Estimator for Public Works, highways, sewers, drains, excavations. Permanent. Location lower New York State. P-7026, Engineering News-Record.

Graduate Engineer: Upstate New York Contractor has opening for young man W/BSCE Degree for Estimating and Engineering position. Experience in millwrighting and industrial building desirable. P-7043, Engineering News-Record.

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P-6998, Engineering News-Record,
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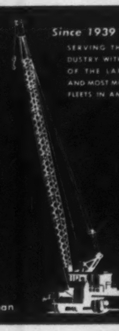

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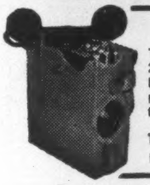

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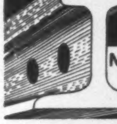

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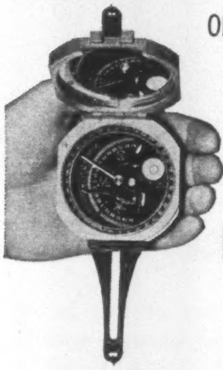

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Editorials

To Stop Corruption

Every professional and trade organization representing construction men should right now be considering seriously what it can do to prevent recurrence of the present rash of scandals in the industry. Each has an opportunity to do something to prevent new scandals.

The corruption plaguing construction (ENR June 29, p. 60; July 13, p. 96) is a problem worthy of collective action such as the leading societies and associations can give—if they will. And there is already some evidence that they will, although it is not yet clear how effective they can be.

The National Society of Professional Engineers has spoken out at its recent meeting against the construction scandals (ENR July 13, p. 23), but NSPE is hard put to do more than inveigh against evils in hopes that it can encourage its state societies to act against the perpetrators. And there is some question as to what the state societies, or even the state registration boards, can do about registered professional engineers found guilty of misconduct. The state laws vary in their provisions for revoking PE licenses.

The Associated General Contractors this week is circulating to its 7,300 member-firms a letter from President M. Claire Miller, deploring the publicity brought by construction's scandals and urging conduct in keeping with AGC principles (see p. 17).

There has been no official reaction as yet to current scandals from the American Society of Civil Engineers. But the Society's Executive Committee meets next month. Next week, there is a meeting of the board of directors of the Contractors Division of American Road Builders Association—another industry group that might logically be expected to put its collective mind to the problem of eliminating corruption in construction.

Admittedly, the professional and trade organizations are circumscribed in what they can do legally about misconduct among their members once it has been charged. Industry groups can cooperate with authorities, testify if asked by anyone authorized to receive testimony. But guilt generally has to be proven in a court of law before an organization is safe from claims of libel or legal action for suspending or expelling a member.

However, the sole concern should not be with the weeding out of miscreants. Rather the organizations concerned should be seeking ways of keeping members from the kinds of misconduct troubling construction.

Joist Spec Needs Revision

Fabricators of open-web steel joists, seeking to broaden the market for their product, have approved a new Steel Joist Institute specification permitting higher-strength joists—yield point up to 50,000 psi. This has led to resignation from SJI of a founder member, Macomber, Inc. Company officials claim the new specification is detrimental to the joist industry (see p. 27).

This is not a matter of industry concern alone. Many architects and engineers accept industry standards at face value and will call for "joists fabricated in accordance with the Steel Joist Institute Specification for Open-Web Steel Joists." If fabricators do not deliver joists that meet this specification, designers and contractors have cause for concern.

The fact that 27 other fabricators have retained their membership in the SJI appears to indicate that Macomber may not be entirely in the right in this controversy. But Macomber does have some sound arguments.

For one thing, the SJI specification does not have adequate limits on chemistry. It permits quantities of some elements that have an adverse effect on weldability.

Secondly, it makes no provision for marking material to indicate stress grade. Since high- and low-strength materials look alike, mistaken substitution is possible.

And the specification leaves inspection of the final product to the manufacturer. In contrast, the American Institute of Steel Construction specification for structural steel states: "Material and workmanship at all times shall be subject to the inspection of experienced engineers representing the purchaser."

The SJI should correct these deficiencies in the specification. Whether such action would satisfy Macomber remains to be seen, but it would give prospective purchasers much more confidence in the specification.

How Much Pumped Storage?

Pumped-storage power is not a subject you would expect to be brought up by Rep. Clarence Cannon's House Appropriations Committee. Yet, that group is quietly promoting the idea of studying the nation's pumped-storage potential.

The committee's interest grew out of two factors: First, testimony on the subject by representatives of the Southwest Power Administration, the agency that transmits and disposes of surplus federal power in the Ozarks area; and second, committee members' knowledge of Union Electric Company's Taum Sauk pumped-storage power plant now under construction in Congressman Cannon's home state of Missouri.

Result: The committee's questions to the Corps of Engineers and the Corps' estimate of how much a study would cost (see p. 27).

Since the House Appropriations Committee can't take the idea any further, it might be a good thing now for the Senate or House Public Works Committee to keep it moving. There may well be power awasting at some existing projects.

"We shot this thin shell roof in 100° heat with POZZOLITH concrete"

Report on "True Gun-All" wet mix concreting at new Chester Nimitz High School

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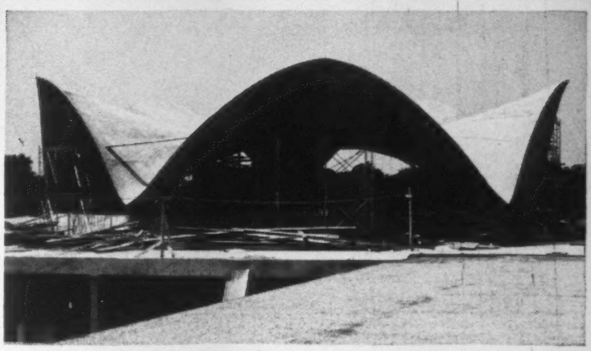

THIN SHELL HP CONCRETE DOME at Chester Nimitz Junior High School, Tulsa, Oklahoma. Parabolic structure measures 80 feet in diameter, is supported by 5 post-tensioned reinforced columns. Architect: Frederick Vance Kershner, Tulsa • Structural Engineer: Albert Solnok, Tulsa • General Contractor: E. A. Cowan Construction Company, Shawnee, Oklahoma • Concrete Contractor: Max True Company and True Gun-All Equipment Corp., Tulsa.

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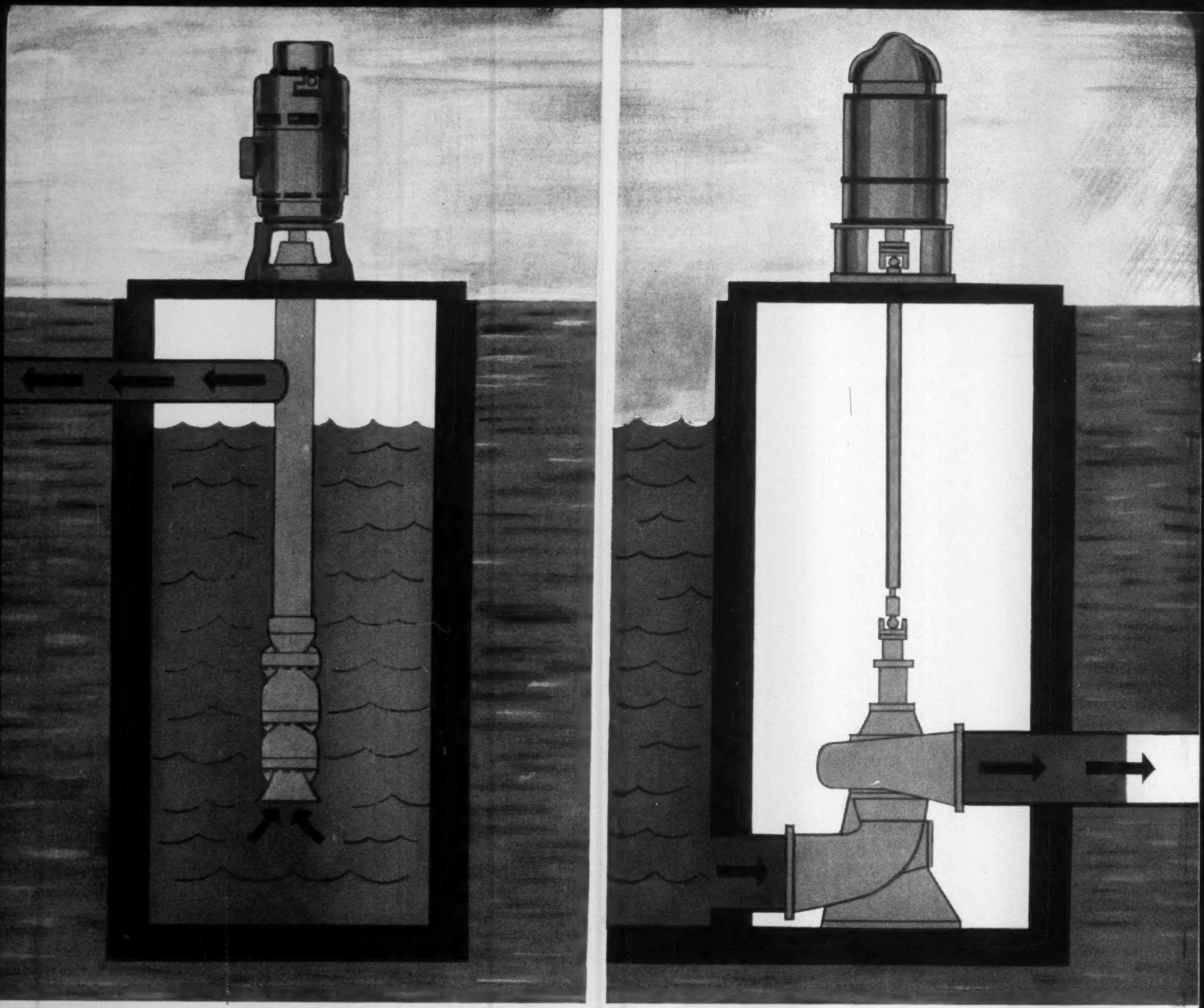

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